Norwegian School of Economics

Bergen, Autumn 2021

Active Fund Performance

A meta-analysis on active fund performance, the value of active funds in crisis and the active share measurement

David Aaslid Grimstad

Supervisor: Professor Tommy Stamland

Mater thesis in Financial Economics

NORWEGIAN SCHOOL OF ECONOMICS

Abstract

I present in this meta-analysis a comprehensive analysis of active fund management. The master thesis is done using both the ‘conventional view’ of active fund management based upon research by Carhart (1997) complemented by Malkiel (1995), Gruber (1996) and Jensen (1968). The thesis further study the value of active funds in crisis, and the use and value of the active share measurement.

The question on the value of active fund management is discussed using results on fund performance after fees, the persistence of well performing funds and the skill of active fund managers. Research suggests that most active mutual funds does not create excess return the investor, and should therefore not be invested in. It is further clear that there are skilled fund managers but the problem rather being the profits taken by the operating cost of said fund. There are also tendencies of persistence among both the well performing and poorly performing funds.

The second research about active fund management in crisis investigates how these funds have performed and behaved during earlier crisis, and how they could be of value to investors. The results show that active mutual funds have the skills and opportunity to perform better during recessions, resulting in better performance compared to expansion or calm markets, hence an outperformance of passive funds in less efficient markets. Research also show that the active funds have utility beyond money for investors in a diversified portfolio.

As for the third research question about the active share measurement, the strengths and weaknesses are studied. Research shows that funds with a higher active share perform better compared to funds with a low active share. As for the use of active share as a predictor of performance or skill literature is skeptical as active share do not describe the additional volatility and larger downside risk when having a more active management.

Preface

This master thesis was written in the fall of 2021 to conclude my Master of Science degree in Economics & Business Administration at the Norwegian School of Economics (NHH), majoring in financial economics. From the summer of 2021 I have spent most of my time diving into the depts of literature on my chosen topic, getting as close to the original source as possible while at the same time using resent and relevant research.

The theme for this thesis is often in the medias attention and in debates both in academics and in the news. When this theme is in news it is most often in a negative light as the focus is often on the more 'cynical' part of the industry or expensive active funds, which also are the most aggressively marketed funds according to sources in literature.

My interest in the theme of mutual funds was first discovered when learning about private finance in the course FIN432E Personal Finance and Taxation, where the placement of wealth by the average Norwegian was presented. When introduced to both what is theoretical optimal, and the behavior of neighboring countries I was both astonished and disappointed on the low percentage of peoples savings in Norway placed in mutual funds. It should in theory not be a problem to place a proportion of the savings in mutual funds, so it puzzled me why the percentage was that low.

Starting to look into the subject I quickly understood the complexity of the puzzle, but also the limitations from my point of view. Given my background and knowledge it is obvious that the behavioral economics-part should be studied by others, I therefore decided to study what literature tell us about what the investors should be doing given the available information. Additionally, I wanted to look into active funds given todays economic 'climate' given the special circumstances during the Covid-19 pandemic and following economic crisis, and the subject of active share as the popularity and use of the 'it'-word is still very present in both master thesises and literature.

This thesis is produced in the Microsoft Office 2013 suite. The literature for the thesis is collected via the databases available at the NHH library, SSRN research publishing, and other journals open online.

I would like to thank my supervisor, Professor Tommy Stamland, for invaluable counselling, help and support throughout every step of the process, and last but not least my family for all the love and support through my academic career.

The results and conclusions in this thesis are entirely those of the author.

Ålesund, 19th December 2021

David Aaslid Grimstad

Norwegian School of Economics, 2021

Contents

List of Figures

List of Tables

1. Introduction

1.1 Motivation and purpose

The management of funds or wealth is a section of finance that has always attracted focus, but maybe in increased strength for the past years with the rapidly increased availability of information both in form of literature and data. The global markets are experiencing rapid growth for the last years with gained both the amount of capital and the number of products. Despite the fact that both the political environment is and have been unstable, and the very recent Covid-19 pandemic that hit the global economy, the growth has not slowed down in general after the uncertainties since later 2019, continuing to this date. But with gained capital and popularity, the theme has yet again spiked the debate on active and passive management of funds in the media. Figure 1 below show that the amount invested in Norwegian funds in November 2021 is six time larger than in 2009, showing no sign of slowing down.

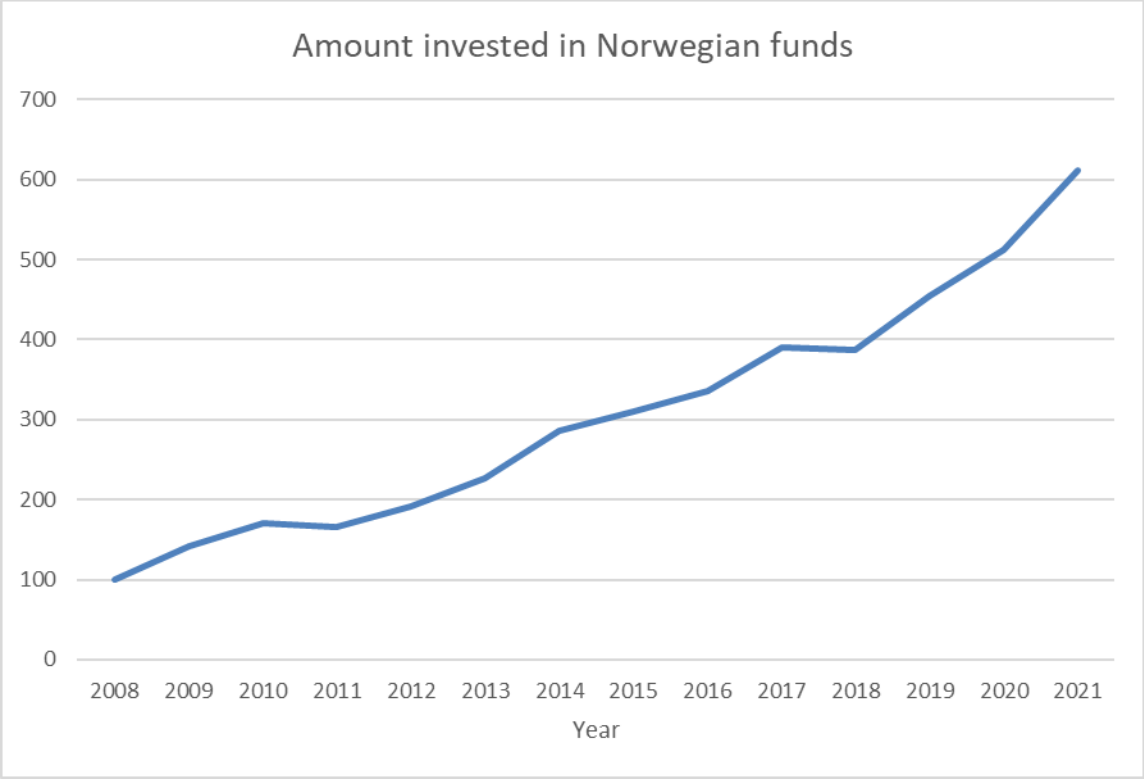

Figure 1: Growth in amount invested in Norwegian funds

Funds with an active manager are meant to deliver excess return covering both the higher cost in form of fees and the difference to passive funds, which in return has lower fees. But research has shown that it is not an easy task for fund managers to beat the market adjusted for risk over time, hence the competition for skilled fund managers with abilities to beat the market. It is further clear that it is hard for both consumers and academia to foresee which funds and fund managers that will we worth paying the extra fee to hold in your portfolio of assets. While having the special circumstances in the markets today and for the last two years, the question on how the active funds perform during crisis once again have returned to the spotlight.

The measurement 'active share' of a fund has gained increased attraction the last years, even though the legitimate activity measurement was introduced by Cremers and Petajisto in 2009 and have since been a popular topic in both academical literature as well as master theses. The measurement is meant to be used as a supplement in the vast discussion of fund management and their performance in varying conditions with a number of different attributes. As a result of my interest for mutual funds as an investment for investors, combined with the debate on the value of actively managed funds and their role in the recent times of uncertainty, i.e. the Covid-19 pandemic and its effect on the global economy, I decided to write about what academic literature and research suggest we as investors should invest in when it comes to mutual funds, combined with a closer look into both the value of active fund management in crisis and the use of active share both as a measurement of activity and performance.

By writing this master thesis I want to both collect and systematize relevant sources in literature from the newly published articles to the original works of Moskowitz, Carhart, Jensen amongst others, and contribute with findings that other students, researchers and investors will find helpful. The research questions and its explanations are presented below, in addition to the structure of the complete master thesis.

1.1.1 Research question

I will in this master thesis investigate and answer the following research questions;

The main research question is: Do active management of mutual funds add value to investors portfolios? The question will be discussed using both the findings by Carhart (1997), Malkiel (1995), Gruber (1996) and Jensen (1968), often described as the 'conventional view' as for

example by Cremers, Fulkerson and Riley (2019), and recent literature given the changes happening in both literature and what is happening today in the global economy.

Sub research question number one: What value do active funds have to investors during crisis? The 'insurance/hedge' argument often used will also be discussed, in addition to how the attributes of active funds affect performance when the economy is hit by a recession

Sub research question number two: What do research tell us about active share as a measurement of activity and performance? Active share is a measurement heavily used both in master theses and academic literature, but how good is actually this measurement when not accounting for the 'it'-factor?

1.2 Structure of the thesis

This thesis consists of chapters 1 until 5, starting with an abstract on page 2, ending with the last references on page 71. In chapter 2 the theoretical background for the thesis is presented, where the relevant theories, definitions and explanations are presented. The chapter includes the basic assumptions used in research and explanations and calculations for measurements used in relevant literature later on in the thesis.

In chapter 3 I use relevant findings through research to conduct a meta-analysis and discuss both the main research question and the two sub research questions. First on how literature view the strengths and weaknesses of actively managed mutual funds, using both the 'conventional wisdom' and recent literature conducted in modern market circumstances. Secondly the different findings of the value of active mutual funds in recessions, and how the value may be dependent on various other factors. Third and last the discussion regarding the active share as a measurement and its use. The discussion will be based upon studies done on either the subject in particular or into factors influencing the assumptions done in the research used.

Chapter 4 contains the results from the discussion in chapter 3, where the most important points of argumentation is summed up and used to answer the relevant research questions as formulated in chapter 1.

In chapter 5 I propose a conclusion to both the main research question and the sub research questions with basis in the results in chapter 4. The robustness of the thesis and suggested further research is then presented at the end.

The reference list of the sources used in the thesis and the appendix of relevant information is presented at the end.

2. Theoretical background

2.1 Mutual fund management

Mutual funds consists of money pooled from investors to obtain advantages both in form of diversification and economies of scale. Investing in mutual funds is seen as an attractive way to access financial markets and increase their wealth without investing in specific stocks. The main benefits to investors according to Chordia (1996) are diversification, cost savings and sharing of liquidity risk. Diversification being the only ‘free lunch’ by Moskowitz (Schwab, 2016). For the remainder of this thesis, both ‘funds’ and ‘mutual funds’ are used about mutual funds.

2.1.1 Types of mutual funds

Funds consists of a number of different investment vehicles, which again have different attributes dependent on what is invested in. Investors must therefore choose if to invest in funds, and if yes choose a fund based on said investors risk aversion and expectations of returns. Below follows a description of what the different types of mutual funds investor can choose to invest in and other relevant attributes of the fund.

The following classification of mutual funds are based on Bodie, Kane and Marcus (2018);

Money market funds

A money market fund invests in money market securities in form of treasury bills, repurchase agreements, commercial paper etc. These assets tends to have short term maturities of around one month. The assets invested in have low risk and a low return compared to most of the alternatives underneath.

Equity funds

This fund invests in equity in companies, hence invest in stocks, but also place a portion of the total assets in other types of securities. Equity funds are divided into either income or growth funds, where an income-fund focuses on companies with high dividends and low risk and a growth fund focuses on companies with the hope of capital gains but with higher risk than income- or dividend funds, a trade-off between safe returns and risk. Each investment policy or prospectus specifies what the fund will invest in form of geographical focus, sector,

style etc.. An equity fund usually holds between 4% and 5% of its assets in form of money market securities to have the necessary liquidity to meet redemption of shares to investors.

Sector funds

A sector fund is a form av equity fund where the fund concentrate on a single industry usually. Examples of typical sector funds are funds that invest in the technology-, energy-, biotechnology-, and utilities-sector. The fund can also focus on a single country or a specific form of securities to invest in.

Bond funds

A bond fund invest in the fixed-income sector. The fund can further invest in different forms of bonds, being treasury bonds, corporate bonds, mortgage backed securities etc. In addition the fund can be specialized within a given maturity ranging from short-term to long-term, and for a given risk from safe to high-yield.

International funds

A international fund invests with an international focus, meaning investing in countries outside of the fund origin. This form of funds can be either global by investing all over the world, regional by investing in specific regions of the world, and emerging market funds which invests in developing nations.

Balanced funds

A balanced fund is supposed to comprehend an entire investment portfolio by investing in both equity and fixed-income securities. These funds can be both aggressive and conservative, or mature over time as a ‘targeted-maturity funds’ that over time becomes more conservative as the investor gets older. Balanced funds are often funds of funds, meaning that it invest in other mutual funds in form of equity funds and bond funds. An example of a balanced fund is a life-cycle-fund that gradually becomes more conservative.

Asset allocation and flexible funds

These funds are a version of a balanced fund, but with more room for adjustments dependent on the portfolio managers view. The fund holds both equity and bonds as a balanced fund, but the proportions will vary as the forecasts of each sector are adjusted to the fund managers beliefs. The manager will change proportions to optimize the fund according to market timing and will therefore not be a low-risk investment.

Index funds

A index fund replicates the performance of a broad market index. The index fund is investing in shares that are included in the given index, that being Standard & Poor's 500 or OSEBX. This is a low-cost way of investing in a passive investment strategy. Indexes can also be tied to nonequity indexes, bond indexes etc.

2.1.2 Active- and passive management

A fund can be managed in multiple different ways, but the two general directions are either active- or passive management. As described on page 19 when presenting 'The Efficient Market Hypothesis' the fund managers perception of the market decides which strategy to choose, where a belief in a weak market efficiency equals the possibility of excess returns in active fund management through increased probability of finding mispricing. Likewise a belief in a strong form of market efficiency gives no incentive for fund managers to search for mispricing in the market and are therefore better of investing in an index fund. By using an active fund management the manager aims to get a risk adjusted excess return above what a passive of index fund will get.

Passive management or index management aims to simply replicate the reference index by keeping identical weights on each asset in the index and should end up with the same risk and return as the benchmark. The construction and maintenance of an index fund costs much less than an active fund. The lower costs of index funds and the increased research into the returns of mutual funds have led to a spike in popularity of the passive funds (Cremers et al., 2011).

2.1.3 Reference indexes

Reference indexes is not a mutual fund type, but a collection of assets that are not as the name implies buying and selling stocks for the investors benefit. A reference index shows the movements in the market from which the reference is created from (VFF, 2021). It is normal to invest in index funds based upon countries economies, the reference index will contain the correct (to the decimal) weights of stocks on the mathematical index in the given country. Examples reference indexes are; OSEBX (Oslo Børs Benchmark Index) showing the movements of the Norwegian stock market, OSEFX (Oslo Børs Mutual Fund Index), The S&P 500 (The Standards & Poor's 500 Index) – top 500 companies weighted at

capitalization, DIJA (The Dow Jones Industrial Average) – includes the 30 largest/biggest/most important USA companies calculated with price-weights (Banton, 2021). Table 1 below show the annual return on major European, American and Norwegian indexes from 2008 to December 2021.

Country	Index	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
US	The S&P 500	-38 %	23 %	13 %	0 %	13 %	30 %	11 %	-1 %	10 %	19 %	-6 %	29 %	16 %	24 %
US	DIJA	-34 %	19 %	11 %	6 %	7 %	27 %	8 %	-2 %	13 %	25 %	6 %	22 %	7 %	17 %
UK	FTSE 100	-31 %	22 %	9 %	6 %	6 %	14 %	-3 %	-5 %	14 %	16 %	-13 %	17 %	-12 %	13 %
NOR	OSEBX	-54 %	65 %	23 %	-12 %	15 %	24 %	5 %	6 %	12 %	19 %	-2 %	17 %	5 %	20 %
NOR	OSEFX	-57 %	70 %	22 %	-19 %	21 %	24 %	6 %	7 %	12 %	17 %	-2 %	19 %	7 %	18 %
GER	DAX	-40 %	24 %	16 %	-15 %	29 %	25 %	3 %	10 %	7 %	13 %	-18 %	25 %	4 %	14 %
FRA	CAC 40	-43 %	22 %	-3 %	-17 %	15 %	18 %	-1 %	9 %	5 %	9 %	-11 %	26 %	-7 %	26 %

Table 1: Annual returns

Prospectus

By reading the prospectus of both an active fund and a passive fund it is obvious what the goal is and how the specific provider of the fund aims to get there. The specific investment funds investment policy is described in its prospectus. The prospectus is by some described as a weakness as the fund management can 'choose' which benchmark the fund will be compared with according to Sensoy (2009), while if the benchmark is wrong it is assumed it will be caught by its investors fast and corrected.

For the passive fund DNB Global Indeks A the prospectus is:

> *"DNB Global indeks is an index fund where the objective is to replicate the Morgen Stanley Capital International World Index composition and performance, as good as possible. It will therefore not be attempted to achieve better returns in the fund than MSCI World index. To achieve an exposure that reflects the composition of the index, the fund will be investing in the companies that for all time represents the shares of MSCI World index with approximately the same weights. Companies that do not meet DNB's minimum ethical standard will be held outside the Fund's investment area."*

For the active fund Delphi Global A the prospectus is:

> *"Delphi Global is an open-end UCITS fund incorporated in Norway. The Funds objective is to generate strong capital growth through a long-only and unconstrained approach, with a bias towards large and mid-caps. The Fund invests in a concentrated portfolio of equities (usually 40 – 60 positions) selected from across*

world equity markets. The benchmark is the MSCI World Index NTR. A variable symmetric management fee is applied to this fund. Total management fee will always be in the range of 0-3 %."

2.1.4 Active management strategies

For an actively managed fund to exceed the returns of its reference index, the active fund must differ either in weights in assets or have taken different positions compared to its relative competitor. The methods or strategies used are usually divided into stock selection or by factor timing, where the manager can use both strategies combined or choose either one.

Stock selection involves the manager picking stocks that the fund managers believes will outperform comparable stocks in the market. Factor timing involves bets on systematic risk factors meaning bets on whole industries or sectors of the economy that differs from the reference index. This includes taking different positions in sectors, assets etc. Eugene Fama support this way of distinguishing the strategies from another, and multiple studies have investigated both the quality of stock selection and factor timing from Treynor and Mazury (1966), Fama (1972) and Henriksson and Merton (1981).

Research have shown that it is possible for funds to achieve excess return by using stock selection as a strategy, but the reason being the types of stocks and not necessarily the specific stocks (Grindblatt and Titman (1989, 1993); Wermers (1997, 2000); Daniel et al (1997)).

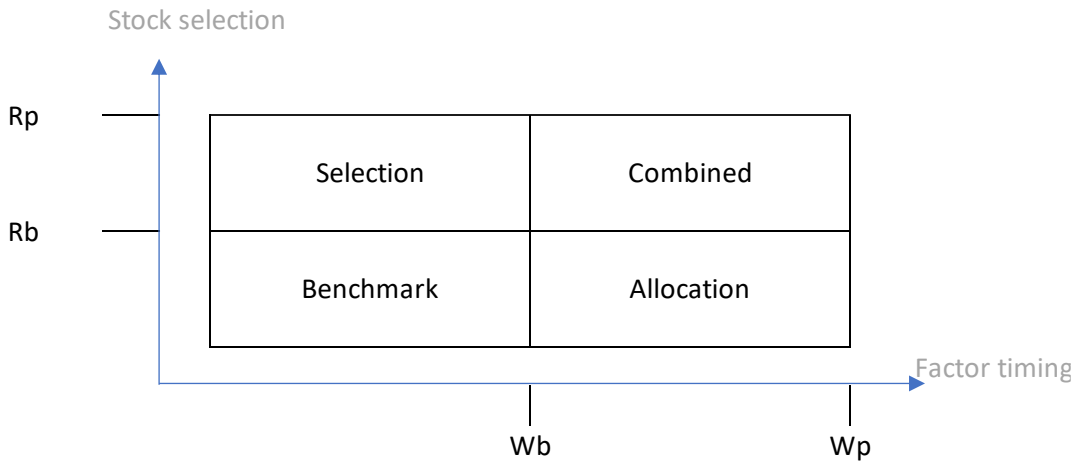

Figure 2: Factor timing and stock selection

2.1.5 Forms of analysis

There are several different reasons behind selecting stocks or choosing sectors to invest in, but the most common on a professional level are the fundamental- and technical analysis. As with stock selections the aim of using these methods are to find incorrect valuations in the market from which the investor can make a profit.

Fundamental analysis

A fundamental analysis is an analysis done do determine if the price of a given stock is above or below the 'correct' price of said stock. If the price is below what the result from the calculation then the investor should by the stock, and go short if the price is above the 'correct' level.

The calculation is based on earnings and dividends, expected future interest rates and risk evaluations, and shows the present discounted value of all the payments a stockholder will receive from each share of stock (Subramanyan and Venkatachalam, 2007). The analysis is done with both historic data of earnings and company balance sheets, with additional investigation into all factors that can influence future value of the stock, including management, industry, performance in market etc. (Fama and French, 1992)

Technical analysis

A technical analysis is done by studying the stock prices, looking for "recurrent and predictable patterns in stock prices" as described by Bodie, Kane and Marcus (2018). For example doing a technical analysis in form of a relative strength approach aims to find stocks that responds stronger than comparable companies in the same sector.

From a technical analysis the analyst can uncover resistance levels, levels that the stock will have trouble getting above, and support levels, which are levels of which the stock is unlikely to fall below. These levels are assumed to be a result of market psychology and may be set very differently to what is found when doing the calculations as with a fundamental analysis. The person doing technical analysis is often called a chartist because of their study of charts and patterns are such an important part of the analysis. (Bodie, Kane and Marcus, 2018)

2.2 The efficient market hypothesis (EMH)

The efficiency of the market is crucial for both investors when deciding what funds to invest in, and for fund managers when deciding how a given fund should take positions in the market. The efficient market hypothesis described by Fama (1970) builds on the basis that prices in the financial markets are based upon all available information, and it should therefore not be possible to gain an informational advantage by managers. The hypothesis therefore states that all investors should hold a portfolio of weighted assets since it is not possible to gain excess returns when all available information is reflected in the prices.

Fama (1965) concluded in his doctorate dissertation that his research showed evidence in favor of the random walk-hypothesis, which means that stock prices follows a random walk and that we are not able to predict the future movements of a stock price. Following the research of Fama (1965), Samuelson (1965) showed that stock prices move according to the random walk hypothesis because of the efficiency of the markets. Samuelson argued that in an efficient market the prices will change constantly to always reflect all available information.

Following the studies from 1965 by Fama and Samuelson, Eugene Fama (1970) divided the hypothesis into three forms according to how efficient the markets are, or how one would interpret the phrase “all available information”; weak-form, semistrong-form and strong-form.

In the weak-form of the hypothesis all former stock prices, trading volumes and interest rates are reflected in the stock prices. According to this form all trend analysis is worthless since historical data is knowledge obtainable by all and is free to collect.

In the semi-strong market efficiency form all public knowledge is reflected in the stock prices, which includes both historical data as in the weak-form, but in addition fundamental data, balance sheets, earnings forecasts etc. From the semi-strong form the only way to achieve excess returns should be by luck or inside information since all publicly known information is reflected in the stock prices.

In the third and strongest form efficient market the stock prices reflect both contents of the weak- and semi-strong form, in addition to taking into account “all relevant information to the firm,…”. In this form an investor cannot be able to create excess returns since all

information an investor would utilize is already in the price, which means that analyzing stocks only leads to costs. (Bodie, Kane & Marcus, 2018)

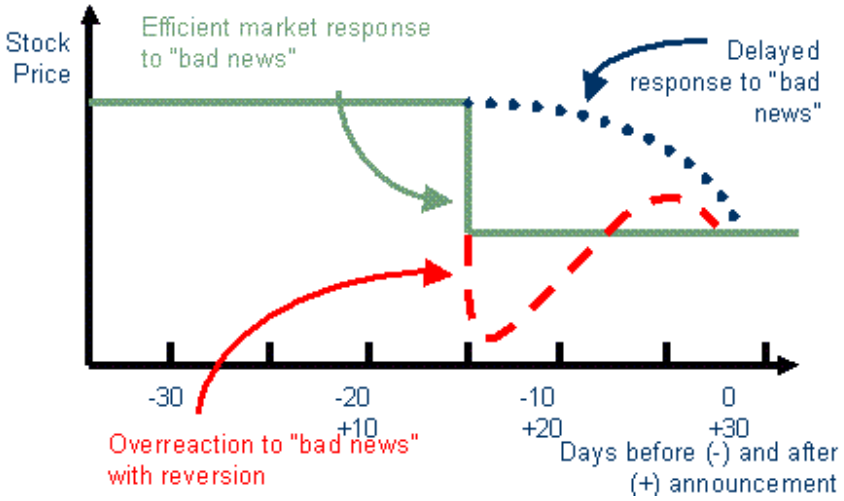

Figure 3: Degree of efficiency

Figure 3 illustrates how an efficient market, and a less efficient market will respond to new, in this case bad, news about a given stock. Given that the market is in fact efficient the stock price will instantly be corrected into the new correct value according to all available information. If the market on the other hand is less efficient the reactions in the market are delayed in form of an over- or underreaction that fund managers can take advantage of given their information.

As mentioned when presenting the basis of active- and passive fund management, a fund managers perception of the market or belief in the efficient market hypothesis is important when choosing what strategy to manage its fund from. If a fund manager chooses an active strategy and pick stocks that the fund manager believes can beat the market, then the fund manager must believe in a weak form of efficient markets.

There are in other words available information not priced into the current stock price, that the fund manager can use the informational advantage upon. If investors and fund managers think that markets are close to perfectly efficient then there are no reason to analyze, or invest in gaining additional information, given that all available information is already reflected in the price. This is the most extreme case of efficient markets and are not realistic given the number of mispriced assets available in all market.

2.2.1 "Grossman-Stiglitz-paradox"

Grossman and Stiglitz (1980) presented a efficiency-paradox which describes how the beliefs of efficient markets leads to mispricing in the market. They argue that:

> *"If all information were reflected in market prices, market agents would have no incentive to acquire the information of which prices are based."*

If all investors in the market believe the market is efficient, meaning that prices reflect all available information, then there are no incentives to invest time and capital into analyzing the market, hence the prices will be unchanged when introduced to new information. This contradicts the efficient market hypothesis since if there are no agents that do collect all available information about the companies, and analyze the markets, the market prices cannot reflect all public information.

This means that if an investor does believe that the market is not behaving according to the efficient market hypothesis and analyzes the marked accordingly, the investor have an opportunity to gain excess revenue. While this process happens, the profit gained by gathering information gets smaller while the cost rises, until the market reaches equilibrium. More investors will follow, and the prices of stocks will be corrected. To sustain an efficient market the market itself must have agents that believes the market is not according to the efficient market hypothesis and use the mispricing to their advantage.

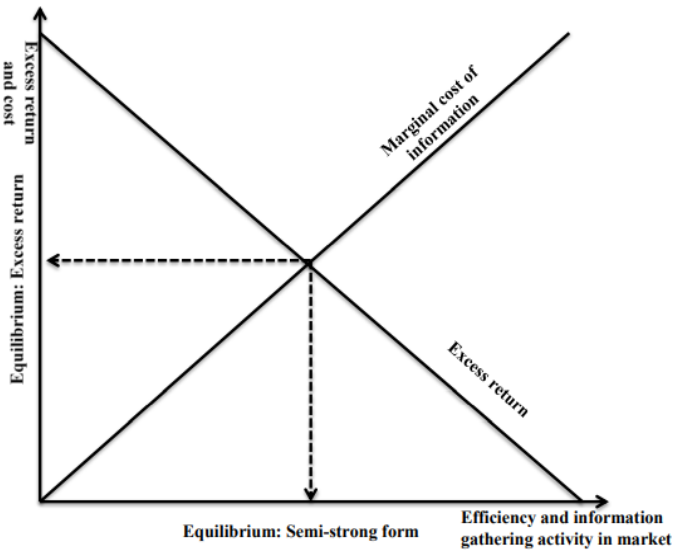

Figure 4: Illustration of the Grossman-Stieglitz-paradox (Johnsen and Storm, 2015)

It is believed in literature that this paradox can also be translated into the fund management market. When a larger proportion of the total capital is placed in passive funds, as the market efficiency says is most rational to gain positive returns, the expected gain from analyzing stocks and markets increases as less capital is used to that purpose. Given that rational investors place their capital in passive funds, then how are the market efficient when all funding are placed in indexes and not active funds? (Smørgrav and Næss, 2011).

2.3 Modern portfolio theory

Modern portfolio theory was introduced by Harry Markowitz and uses diversification as a method for reducing portfolio risk while not lowering returns. The methodology of choosing a portfolio presented by Markowitz is divided into two phases. In the first phase the investor monitor and experience the attributes of the stock to gain intel of how the stock will perform in the future. In the second phase the investor constructs a portfolio of stocks or other assets. The thought is that choose stocks and assets with different attributes to minimize the idiosyncratic risk through the benefits of diversification. To gain an advantage from diversification the assets must not be perfectly correlated (Markowitz, 1964).

According to Sharpe (1964) systematic- or market risk affects all assets and not possible to avoid by diversifying unlike the unsystematic- or idiosyncratic risk as mentioned. Modern portfolio theory is summed up in the ‘mean-variance frontier’ which measures the relationship between return and risk.

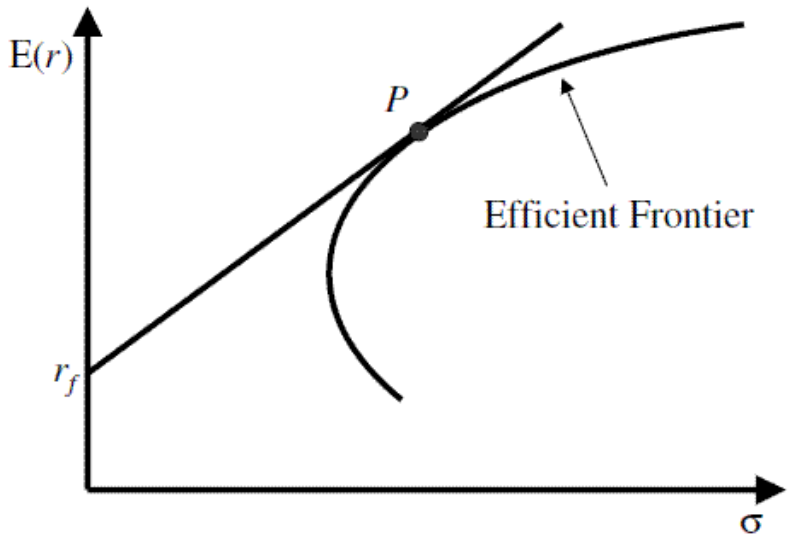

Figure 5: Illustration of the efficient frontier and CAL

The investor aims to hold a portfolio on the mean-variance frontier, with the combination of risk and returns optimal for the investor given the market. The frontier shows the possible combinations of risk and reward available which means it also shows the portfolio with the highest returns per unit risk, and the 'minimum-variance portfolio' (leftmost point of the curve) which are the portfolio with the highest diversification effect.

2.4 Performance measurements

The performance of a fund can be calculated in different ways dependent on what the performance is supposed to be measured against or what is taken into account. Below are a description of the calculation and reasoning behind the most relevant performance measurements.

2.4.1 Excess return

Excess return shows the return to an investment above what is expected from a risk-free asset. The measurement is usually calculated from the risk-free rate of return from for example a bank, but will in this thesis be used as returns above the benchmark. Mathematically excess return is calculated from

$$Excess\ return = r_i - r_b,$$

where r_i is the return on the fund and r_b is the return from the benchmark for fund *i*. Excess return is a simple measure but is not enough to say that a fund is performing well because it does not take into account the additional risk taken to achieve the additional return compared to the 'safe' asset in form of a index fund or the given benchmark.

2.4.2 Risk-adjusted returns

Building on excess return the performance should not be looked at without considering the risk taken to achieve the given return, hence calculating a risk-adjusted return to get a better picture of the performance.

Sharpe rate

The Sharpe rate was introduced by William Sharpe (1996) shows the average excess return above r_f adjusted for average total risk. An investor wants to maximize this rate as it gives

the highest returns given the level of risk. For a fund manager the equivalent is to diversify to get the total risk down. The measurement is calculated as

$$S_p = \frac{r_p - r_f}{\sigma_p},$$

Where S_p is the Sharpe rate, r_p is the return of the portfolio (in this context fund), r_f is the risk free rate of return and σ_p is total risk in the portfolio (/fund).

Informational rate

The informational ratio is a measurement where the reference index and not the risk free rate of return is used as the basis of comparison. The purpose of using the informational rate according to Døskeland (2018) is to find the value added by active management by using a measure that calculates the active return scaled for active risk. The informational rate is useful for evaluating whether or not a mutual fund is able to beat the market or index. The measurement is calculated as

$$IR_p = \frac{r_p - r_m}{\sigma(r_p - r_m)},$$

Where IR_p (informational rate for portfolio p) equals the portfolios (r_p) excess return above benchmark (r_m) divided on $\sigma(r_p - r_m)$ which is active risk measured by the standard deviation of differential return.

Appraisal ratio

Appraisal ratio measures the value added from alpha strategies (stock picking). The performance measure adjusts for active return and active risk since the portfolio (or fund) is systematically weighted against the neutral market risk, making the measurement adjusting for different OLS-betas compared to its benchmark. Appraisal ratio differs from informational ratio in form of correcting for different risk to gain excess returns. The alpha value is a measurement of the returns above what can be explained by exposure to systematic risks. (Døskeland, 2018). The appraisal ratio is calculated as

$$AR_p = \frac{\alpha_p}{\sigma(e_p)},$$

where α_p is portfolio alfa and $\sigma(e_p)$ is the unsystematic risk, or active risk.

2.5 Activity measurements

2.5.1 Active share

Active share is a measurement of how active a mutual fund is compared to its benchmark portfolio. It is measured as a percentage where funds without leverage or short positions are measured between 0% and 100%. The measurement has been defined by Cremers and Petajisto (2009) as:

$$Active\ share = \frac{1}{2}\sum_{i=1}^{N} | w_{fund,i} - w_{index,i} |,$$

Where $w_{fund,i}$ is the weight of stock *i* in the find, and $w_{index,i}$ is the weight of stock *i* in the index or the benchmark portfolio. In a perfect index fund the active share is 0%, meaning that the fund is following the weights of the index perfectly. A fund is not called 'active' as long as the active share is above 0%, the literature usually demand a higher percentage but there are no set standard.

2.5.2 Tracking error

Tracking error use the difference between return of a portfolio and that portfolios benchmark to measure how active funds are. By doing this calculation the investor is able to measure the risk of the funds compared to its benchmark portfolio. Grinold and Kahn (1999) defined TE as

$$Tracking\ error = \sigma(r_P - r_M),$$

Where r_p is the return of the portfolio and r_m is the return of the benchmark or market index. Tracking error gives an indication about how closely the fund is following the benchmark index and is therefore used to measure active risk. An active fund aims to gain excess returns and have a low tracking error, but a higher Tracking error is an expected and necessary evil that investors must accept when the goal is excess returns (Gupta, Prajogi & Stubbs, 1999). The measurement can also be used to compare different funds.

2.6 Investment in practice

When in a real-life situation, the fund manager has three main levels of decision making when deciding how to invest. The three directions being strategic allocation, tactical allocation, and ‘selection’ (stock picking). The strategies are possible to change but will vary in difficulty and time consumption if change is needed. The strategic allocation is most difficult to change, tactical allocation second and ‘selection’ the easiest.

Strategic allocation is defined as the weights between different assets classes in the portfolio, this being international stocks, national stocks, obligations property, metals, cash, etc. (Anspach, 2021). The strategic allocation is rarely changed, while the tactical handles the daily, weekly, or monthly assessments of what is most beneficial for a given fund. The strategic allocation decides the long-term allocation of the fund and will therefore be the most influential of the three strategy decisions. A study found that 90% of the volatility of mutual funds and 40% of the differences in return could be explained by the funds strategic allocation (Ibbotson & Kaplan, 2000).

Literature describes the strategic allocation as the base of the fund that follows the benchmark, in which there should not be much change. Whereas the tactical allocation decides which asset classes to take an overweighted or underweighted position. Examples are to make a shift between growth stocks and value stock, or over- and under-weight of sectors or region dependent on how that market is changing, or other factors affecting production in the given sector. These choices or results of evaluation is called beta bets (Barone, 2020). ‘Selection’ or stock picking is the even more specific form of tactical allocation, were the choices or changes happen between single stocks or other assets which are in the weight of the markets. The selection is called alfa bets.

As for the active or passive fund, a passively managed fund will through all three levels rebalance the portfolio to follow the benchmark as closely as possible, while keeping the costs at a minimum. Unlike the passive fund, an active fund is meant to beat the benchmark and deliver excess return to its investors.

To deliver on the target it must do research to gain an informational advantage by doing analysis on the market, which in turn raises costs above what is expected from a passive fund. The informational advantage could result in information about future trends in economies or sectors, that the fund manager in turn can use to shift its exposure to gain an

advantage. On a short term basis, the advantage can be used to sell or buy specific stocks based on analysis on the specific corporations. While doing these complex analysis the fund managers must at all times be aware of what systematic- and/or unsystematic risks the fund is exposed to when taking a new position.

2.7 Active management in crises

When a fund is actively managed the investors would expect the managers of the fund to be alert and prepared in case of turbulence in the markets and have taken positions to protect or take advantage of the fund. There are limited academic literature on the specific theme of active management in times of crises, so the basis for this part of the theory is both research on the specific theme and traditional financial literature in the context of crises or turbulent periods of time.

The 'traditional view' of active management was introduced by William Sharpe in 1966, but since then there has been limited of results backing the advantages of active management. Studies by Carhart (1997), Jensen (1968) and Malkiel (1995) have shown that actively managed funds consistently performs better than their benchmark, but whether or not these results are translatable to another market than the US is debatable since the US markets are highly efficient compared to many other regions of the world.

Recent research has shown that the development within global economy are leading to more efficient markets, which in turn affects the active fund performance. (Ferreira, Keswani, Miguel & Ramos, 2013; Ito, Noda & Wada, 2014). Research by Dyck, Lins and Pomorski (2013) concluded that outperformance depends on the underlying market efficiency.

As mentioned when describing the "Efficient Market Hypothesis" and the views of Fama (1970) all available and relevant information are reflected in the prices, hence to beat the market is no easy task. The "Efficient Market Hypothesis" have later been challenged by both behavioral finance and several adaptive hypothesis theories. Research on these challenging views have found that the performance of funds are correlated with the underlying market environment and volatility (von Reibnitz, 2017), and that expected fund performance is dependent on the state of the economy (Koswoski, 2011; Ferson & Quan, 2014).

"amidst every crisis, lies great opportunity" – Albert Einstein

When the market is in a period of recession or crises there is increased opportunity for active managers to create value for its investors through chaotic or stressful market conditions, which in turn leads to less efficient positions taken and incorrectly priced assets (Pasquariello, 2014). With inefficient markets the active managers can deliver value to their investors, and acts as a condition that must be met (Waring & Siegel, 2003).

Research into the value of active management by Ferson and Schadt (2016) and Glode (2011) found that it is dependent on the marginal utility of consumption, showing that when an economy is in a recession can lead to higher marginal utility because of consumption going down and lower risk-taking.

A study by Kosowski (2011) found that active managers add value by outperforming in recessions. Additional studies have found that active managers do in fact show better decision making and performance during recessions suggesting that there is a correlation between active return and the higher marginal utility for investors when in a recession (De Souza & Lynch, 2012; Kosowski, 2011). It is worth noting that investors marginal utility is important when considering the value of active management during recessions, which is the perspective that should be in focus (Berk & van Binsbergen, 2015; Kosowski, 2011).

2.8 Investment decisions in crises

When an economy is hit by turbulence there are some common properties that features in economies in form of geographical investment focus, fees, active share and past performance as an explanation of fund performance according to Dahlwuist, Engstrom & Söderlind (2000).

2.8.1 Geographical focus

In the period from 1994 to 2008 the share invested in mutual equity funds with a Norwegian mandate decreased from 80 to 20, meaning that 80% of equity invested in mutual funds were in international mandated. This may be a trend, but the increase in one type of mandate is not an increase in the other, which means that this does not illustrate a decrease in investment in Norwegian mandated funds (Sørensen 2010).

Research by Coval and Moskowitz (2001) found if a fund manager invest a significant part of the assets locally, do better. That suggests that distance to investment choices do matter. Logically there are advantages to invest locally, or in close proximity to the fund manager. Most importantly, by investing close by gives the investor, in this case the fund manager, an informational advantage not as easily available to fund managers investing in more distant locations. With an informational advantage the fund manager could be able to fund outperformance if the advantage is taken advantage of.

2.8.2 Fees

Funds usually collect operating fees yearly with the fee being equal to total fund expenses divided by total fund assets under management (Curry & Napoletano, 2020). As mentioned when formulating the research questions, investing in actively managed funds and paying the higher fee is often seen as a hedge or "insurance" in case of recession or other troubles in the economy globally or locally, but literature is questioning this view.

Studies by Carhart (1997) and Malkiel (1995) shows that higher fees yields worse performance, which in their view means skilled and informed managers does not exist. Glode (2011) shows that high fee funds show worse performance unadjusted for risk, but better risk-adjusted return during recessions. This suggest a countercyclical behavior, which is what the insurance or hedge is supposed to insure against, and at the same time could explain how poorly performing funds stay alive over time.

2.8.3 Market efficiency in recessions

The role of higher fee active funds is beneficial in the market, as the mechanism helps allocate funding efficiently (Gârleanu & Pedersen, 2018). Alongside the findings of Gârleanu and Pedersen, Wermers (2019) argued that the mentioned funds are useful for correcting mispricing in the market, although it is done at a price that may not be necessary. Despite the skepticism around high-cost active strategies, active management can nonetheless collectively benefit all investors in the market, suggesting that both their time and price in principle can be justified (Sharpe, 1966).

No manager would use resources to gather information if it did not pay to trade on it (Grossman & Stiglitz, 1980). Research done by Kosowski (2011) shows some of what is expected from behavioral finance. There will be investors willing to pay a premium for the

funds, as long as they correlated negatively with consumption. The reason being that investors are willing to pay the price to have a superior performing fund during recessions or other forms of turbulence when the marginal utility of wealth is higher.

Even though research shows there are willingness to pay premium for the safety in recessions, the higher fees does not necessarily give access to skilled managers adjusting for fees (Gruber, 1996; Wermers, 2000). Bernstein (1998) find that in the modern market the efficiency is increasing, thus it cannot be expected opportunities for excess return.

Findings by Barras, Scaillet and Wermers (2010) shows that only 0.6% of fund managers show return when adjusting for fees. This does not mean active managers does not have skill or does not create value. Linderud, Bakken, Bøhner and Volde (2020) bring to attention the irrationality of the amount of investors choosing to invest in active mutual fund, suggesting the reason being misinformation from more 'aggressive' marketing compared to passive funds. Gruber (1996) highlighted this "problem" as it is the active management funds that is advertised most 'aggressively' because of the revenue generated to the owner of the fund.

2.8.4 Active share in crisis

Recent studies have shown that funds that charge a high fee and a low active share underperform their benchmark (Cremers, 2017). As mentioned on page 25 active share measures how much a portfolio differs from its benchmark (Pestajisto, 2013). The active share of a fund is not a fixed strategy, but something that may vary over time, it is therefore interesting to investigate how the active share of fund change, and how the funds performance change dependent on active share.

When studying the historical data of active share there are some recurring trends when a specific set of circumstances occur. When economies are hit by periods of volatility and uncertainty, the active share lowers and the fees rises. Examples mentioned are 2003, when the economies were in recovery and active share was on its way down, and 2006 when the uncertainty because of the subprime mortgage-crises was rising. The last example showing that funds gets closer to 'closet-indexers' or more 'index-hugging' when the uncertainty rises (European Securities and Market Authority, 2020). These observations gained further momentum after the financial crisis in 2009 and suggests a lower active share strategy during crisis (Petajisto, 2013).

Studies on active share and performance have resulted in divided results. Cremers and Petajisto (2009) finds that funds with a low active share underperform, while high active share funds outperform when taking both performance with and without fees into account. Cohen et al (2014) and Frazzini, Friedman and Pomorski (2016) question the use of active share as a predictive power suggesting that the empirical evidence for increased performance with a higher active share is weak. A similar study by Smørgrav and Næss (2011) on Norwegian funds found that funds with higher active share outperforms lower active share funds, and that the active share measurement is higher in expansion and lower in recession, as also argued by Petajisto (2013).

2.8.5 Persistence over time

Persistence can be defined as the fact that someone or something persists, meaning in the context of fund management to have a continued or prolonged performance. In financial literature persistence is well documented as funds that previously have performed well seem to continue in that direction (Carhart, 1997). From 1990 until 2006 the share of skilled funds decreased from 14.4% to 0.6% while the proportion of unskilled managers have risen from 9.2% to 24.0% according to Barras, Scaillet and Wermers (2010) suggesting the increasingly challenging goal for active managers to outperform. In a study of equity funds only Denmark and Norway of the participating countries showed results of abnormal returns when chasing past winners (Ferreira, Keswani & Ramos, 2012).

2.9 Relevant crises

Throughout times the world economy has been hit by recessions regularly, but given the availability of data it is only the last three crisis that are relevant for the thesis and will be presented below.

All crisis are by nature different, but they do share similarities in form of consisting of a triggering event, the spread of the shock and the wider impact (OECD, 2008). For the past only 20 years there has been two global recessions, namely the Financial Crisis in 2008-2009 and the Covid-19 Crisis in 2020-2021. These two are also the two biggest recessions since the great depression in the 1930's. Both these recessions had its origin in two world leading economies in China (Covid-19 Crisis) and USA (Financial Crisis) making them spread to the global economy momentarily.

The Financial Crisis grew out of a housing market bubble in the US which spread across the world from the middle of 2007 until 2009. The crisis was a fact when Lehman Brothers collapsed in mid September 2008. Banks collapsed leading to consumers panicking and withdrawing cash from their banks because of fear of loosing their savings. The banking system was under scrutiny, stock prices fell, investors moved their focus to safer assets, and volatility rose. This further lead to a shortage of liquidity leading to falling investment and consumption, bringing the global economy into recession (Thakor, 2015).

As for the most recent and currently ongoing crisis, the Covid-19 Crisis, the triggering event was the discovery of a respiratory virus in China in December 2019 (World Health Organization, 2020). The crisis hit the global market in March 2020 and is considered a special crisis with shocks on both the financial and macroeconomic side of the economy (Grytten, 2020). Contrary to the financial crisis in 2009 this crisis started as a health crisis, then had its basis in the supply side of the economy because of the behavior of the disease making supplier shut down for long periods. This in turn lead to a shock on the demand side of the economy when both people had more uncertainty and less options to spend money on. Governments passed historic measures in both monetary and financial policies to in their view keeping the economies afloat.

3. Meta-analysis and discussion

In this section the three research questions about the value of active fund management, the use and value of active mutual funds as an investment in recessions and the use of the active share, are discussed using relevant literature both on the specific subject and on findings given the surroundings.

3.1 Research question 1: Do active management of mutual funds add value to the portfolio of an investor?

In the following section the research looked upon as the conventional view on active fund management by Cremers, Fulkerson and Riley (2019) are presented. The conventional view being the findings of Jensen (1968), Malkiel (1995), Gruber (1996) and Carhart (1997) about both the returns of active mutual funds and the skill of active fund managers. From the conventional view presented below there are three arguments that will be discussed; fund performance after fees, the performance of the best funds does not persist, and that there are skilled fund managers but few of them have skill excess of fees.

3.1.1 The conventional view

As presented in an article by Cremers, Fulkerson and Riley (2019) the conventional view in literature concludes that

> *"... active management on average adds little value to its investors,",*

Summarizing the findings presented below. The argumentation consists of three parts or main arguments starting with Michael C. Jensen publishing the article "The Performance of Mutual Funds in the Period 1945-1964" and concluding that active management does not create value for investors. Building on that article Mark M. Carharts published the article "On Persistence in Mutual Fund Performance" from 1997, showing that "the results do not support the existence of skilled or informed mutual fund portfolio performance.". Malkiel (1995) supports the conclusion by Carhart (1997) suggesting there are no evidence of persistence performance after 1970s and show the importance of adjusting for survivorship bias.

Gruber (1996) present the puzzle that the growth in mutual funds and active mutual funds even though the active mutual funds on average returns worse than index funds, generating a negative alpha value after fees. Gruber points to one reason to why investors continue to invest in active mutual funds, with dividing the investors into a disadvantaged clientele and sophisticated investors. The sophisticated investors taking advantage of information of previously well performing mutual funds, shifting their investments, while the unsophisticated clientele either invest in funds performing poorly because of advertisement, cannot sell the invested amount in the fund because of institutional rules, or have capital gains large enough to make selling sub-optimal for the investors.

3.1.2 Fund performance after fees

The first part regarding fund performance after fees have studied in mass. Jensen (1968) set the standard by showing that the funds alphas after fees are negative, meaning that the funds are underperforming. The alpha value being the abnormal return above benchmark return. Research by Jensen and Ippolito, (1989) and Gruber (1996) shows that in the period from 1945 until 1994 the average fund generates a negative alpha.

In addition, Davis (2001) found that the alphas are not positive when deducting fees. Wermers (2000) did a similar study with performance in percentages, finding that actively managed funds outperformed benchmark by 1.3% before fees, but underperformed by 1.0% after fees, supporting the findings of Jensen, Ippolito, Gruber and Davies (1989; 1996; 2001).

Berk and van Binsbergen (2015) expanded the works of Jensen (1968) and Gruber (1996) using monthly data from January 2011 to March 2011, finding that the average active fund outperform their index by 0.36% per year. As from both the studies by Wermers (2000) with a significant margin, and Berk and van Binsbergen (2015) with marginally positive results suggest the size of the fees the deciding factor on if the performance after fees are above or below zero.

On the other hand Kosowski, Timmermann, Wermers and White (2006) conclude that fund managers often do have skills good enough to cover their costs, the problem rather being performance measured against the performance of the benchmark, which means the funds are performing after accounting for fees but not when comparing to the benchmark. Additional research by Daniel, Grinblatt, Titman and Wermers (1997) find that the skill to

pick stocks is strong enough over time and should be enough to create value for investors excess of fees.

The above mentioned studies are done on the American fund market which is known to be of the most efficient markets in the world, compared to both emerging markets and developed European markets that have potential for misplacement because of less efficiency. A study performed by Otten and Bams (2002) on European funds find that it is possible to perform excess return above benchmark with an actively managed mutual fund.

It could therefore seem irrational to invest in active funds like pointed out by Linderud, Bakken, Bøhmer and Volde (2020) suggesting the reason might be a combination of misinformation and well performed marketing of actively managed funds resulting in a not-informed decision.

The research done and articles written after the earlier presented as the 'conventional view' is as expected often based upon the older studies but modified or set under a new set of circumstances given said changes. The studies done in recent years have thus not shown results significantly deviating from what is assumed 'true' in the conventional view, but there are studies showing what the reason for the underperformance could be.

Research also mentions other aspects influencing the performance of mutual funds. A study looked into manager ownership shows a relationship between both increased performance when increased percentage manager ownership in the fund, and that fund with low manager ownership tends to underperform (Khorana, Servaes & Wedge, 2007; Cremers, Driessen, Maenhout and Weinbaum, 2009). It therefore seems like investors should be skeptical to funds with a lower percentage of owner ownership.

As for other measurements or attributes to avoid when choosing funds that have performance excess of fees, Singal and Xu (2011) find that funds that have disposition behavior underperform the funds without the same behavior by 4-6% year.

Studies on fund managers with more than one shows results on fund managers that manages more than one fund, often a hedge fund manager that have a mutual fund to manage on the side (Nohel, Wang and Zheng, 2010). Research by Chen and Chen (2020) find an outperformance, while both Cici, Gibson and Moussawi (2010) and Del Guercio, Genc, and Tran (2018) find that the funds tend to underperform. Whether or not this is a valid argument

in the discussion of underperformance after fees is not clear, but should be mentioned as it can have some effect.

Debating the fairness of the methods used, Amihud and Goyenko (2013) did a study on funds performance and how much of it is explained by common factors such as large-cap and small-cap stocks. They suggests funds that on average both have a low percentage of historic returns attributable to common factors and have performed strongly in the past outperform by 3.8% per year in the future.

Brown, Sotes-Paladino, Wang and Yao (2017) suggests that the underperformance of active fund management can in part be explained by a systematic intra-quarter performance seasonality, something that according to them can show new features of the existing findings of active fund performance. This component of the underperformance puzzle holds across both fund sizes and styles according to the authors.

Lynch and Musto (2000) show or confirm something that is expected but worth noting. The fund managers that perform poorly are more likely to change strategy than those who perform well. Those poorly performing fund managers are also more likely to improve their performance than those sticking to their original strategy. The poorly performing funds are expecting to have an outflow of funds which often leads to the merger of funds as a rationalization measure taken by management.

Warren (2019) challenge the proposition by Sharpe (1991) with saying that his statement should not be taken as an undisputed truth. As mentioned earlier, Sharpe (1991) claim that active management of funds is a negative sum game after costs. Warren suggests that the markets today are closer to what Grossman and Stieglitz (1980) propose as an equilibrium than to the claim of Sharpe with no returns to gather since every form of information is already incorporated in the prices in the market.

As Kosowski, Timmermann, Wermers and White (2006), and Amihud and Goyenko (2013) points out, Warren suggests that active funds can outperform after costs if the active fund looks for investments outside of the US markets which are expected to be the most efficient in the world, leaving few and hard to find investment opportunities open for the active fund managers. He further propose that investors using funds as a measure for saving should consider if the economic environment facilitates enough value added by active managers to

cover their fees. If they do not take this into account, they might be part of the negative sum game described by Sharpe in the original works on the subject.

3.1.3 Persistent performance

As mentioned the second part of the conventional view is that the best funds does not persist, meaning that the performance of the good funds will not continue over time. Hence an investor cannot use past good performance as a criterion when choosing which funds to invest in.

The often-mentioned study by Carhart (1997) concluded and found multiple different findings on the subject. Firstly, he was the first to use a survivorship bias-free database, meaning also dead funds and not just currently operational funds are part of his analysis. Secondly, he found persistence in performance for the worst performing funds, meaning a bad fund has a tendency to continuing being bad over time.

Earlier studies with survivorship bias will inaccurately find evidence of persistence performance as still operational funds more likely have overperformed compared to a non-operational fund that after not performing as good as expected are likely to be merged or otherwise rationalized (Elton, Gruber and Blake, 1996). Further research by Brown, Goetzmann, Ibbotson and Ross (1992) find that with inclusion of only operational funds they found a “false appearance of persistent performance” as expected.

Additional research in the same time period as Carhart (1997) supports the findings as for example Malkiel (1995) finds no evidence of persistence performance after 1970, and Phelps and Detzel (1997) suggesting that persistence disappears when taking into account risk or newer timer periods.

Contrary to the first argument there are several studies done in modern day economies showing results that differ from the ‘conventional wisdom’. There are several studies suggesting that active management of funds have persistent performance. When calculating the average performance of funds, Berk and van Binsbergen (2015) found that active funds outperform their index in the period 1995-2011 by 36 basis points per year, equivalent of 0.36% per year, the problem being the cost in percentage is above the returns found as mentioned earlier. Berk and van Binsbergen shows that using their ‘added value’ measure the active fund on average performs above their benchmark.

Kosowski, Timmermann, Wermers and White (2006) used the methodology by Carharts (1997) original work on fund management, with an adjustment to make it more robust for finding statistical significance, and found persistence performance among fund managers. Research by Bollen and Busse (2005) support the claim of other mentioned studies above, concluding that there is persistence when using daily returns compared to many other studies that use monthly returns as a standard.

Hendricks, Patel and Zeckhauser (1993) show in a study that on short term (in this study defined as four quarters), both the worst and best performing funds have significant persistence. It is worth noting that the best performing funds only marginally outperformed their benchmark after fees. The study used survivorship bias-free data, which as mentioned can be discussed as both a strength and a weakness. However, the study shows both a form of persistence in the shorter term and that fund managers can achieve returns excess of fees.

Brown and Goetzmann (1995) did a similar study to Hendricks, Patel and Zeckhauser (1993), also with survivorship-bias free data. They conclude that the persistence in performance varies dependent on the time horizon chosen for evaluating persistence in said performance. The study also finds interesting results that is not captured by risk-adjusted models, with reversed patterns when it comes to winners and losers performance – meaning that past winners loose in the next period and the other way around, this effect cannot be related to managers strategies according to the authors. Additionally, as the weaker-performing funds often cease to operate, the surviving funds gets additional inflow of capital as investors move their capital.

Research by Kacperczyk, Sialm and Zheng (2008) examined unobserved actions effect on persistent fund performance. The study include factors that are not available for analysis specifically, but using the ‘return gap’ it is possible. The unobserved actions are for example “timing of trades, related transaction costs, managers informational advantage, trading costs, the agency problem and investors externalities in their model.” The study concludes that the unobserved actions have a persistent effect in the long run, but that the effect is not consistent across funds and that the ‘return gap’ could be useful because of its “predictive power”.

A study by Grindblatt and Titman (1992) on 279 American mutual funds from 1974 to 1984 using passive portfolios as a benchmark for measuring performance. Their analysis is a 5-

year persistence test where evidence suggests positive performance persistence. The authors mention that the persistent performance could partially be explained by different transaction costs and fees for the mutual funds.

Bollen and Busse (2005) used Carharts (1997) approach with modifications when studying persistent performance. The study constructs a daily momentum factor building on the monthly momentum factor by Carhart (1997) finding that when ranking funds by risk-adjusted quarter returns the top percentile yields statistically significantly abnormal returns and showing robustness given changes in either market timing, stock selection or market models, and with inclusion of momentum strategy. Meaning that the best ranked funds performed very well after the ranking and that mutual fund managers show more timing ability when using daily returns compared to monthly returns as in Carharts study (1997), highlighting some of the weakness in the common use of monthly returns when evaluating fund performance and persistence.

Berk and Green (2004) developed a model about the mutual fund industry, suggesting that the industry will by default be self-destructive in measuring performance. This is because the amount of capital that is to be allocated to funds, are allocated by investors into the funds performing the best. This happens even though performance is not persistent over time, and the performance is not on average above its benchmark. While the assets under management increases, its performance tends to decrease – a phenomenon called ‘diseconomies of scale’ meaning that while increasing output there is a point where the average cost curve increases after decreasing until that point. This means that in equilibrium there will not be funds that persistently outperform the benchmark since those funds will have increasing amount of capital until the alpha lowers enough for the capital flow to stop, even though the skill of the active fund managers are high.

As for if the fund is persistently performing above what its benchmark is, Berk and van Binsbergen (2015) have pointed out a weakness of the theoretical situation. They first point out that “the net alpha is determined in equilibrium by competition between investors, and not by the skill of managers.”, and therefore calculate their own measurement for performance of fund managers, hence the use of ‘value added’ as mentioned earlier.

3.1.4 "Some fund managers are skilled, but few have skill in excess of cost"

The third argument of the conventional view is that there are in fact fund managers that are skilled, but that the skill of those are not enough to create value to its investors when taking into account the fees actively managed funds collect from its investors. Fama and French (2010) find results supporting this view with "few funds produce benchmark-adjusted expected returns sufficient to cover their costs". For the investor this means that to gain access to the skilled fund managers, the cost of the access is too high to cover its excess returns.

Barras, Scaillet and Wermers (2010) support the findings from Fama and French (2010) by doing the numbers. Their research showed that 0.6% of fund do have skills in excess of fees, while 75.4% of fund management have some skill but is not able to translate the skill into excess return. The same study also found that the proportion of skilled fund managers are decreasing, starting at 14.4% in 1990 ending at 0.6% in 2006.

The study by Barras, Scaillet and Wermers (2010) is done with the 'false discoveries' technique that are said to be a technique that are said to underestimates the proportion of nonzero-alpha funds because of the low signal-to-noise ratio or appraisal ratio in fund returns, hence questioning the results from studies using said technique. The technique controls for funds that yield significant positive returns solemnly by luck.

The decreasing proportion of skilled fund managers by Barras, Scaillet and Wermers (2010) are often explained by the increasing efficiency of the equity markets, hence the increasing efficiency leading to less profitable investments needed to offset the fee demanded for the fund manager (Bernstein, 1998). Chordia, Roll and Subrahmanyam (2011) and Conrad suggest the amongst other reasons that higher turnover, decreasing trading cost and increasing professional investing have resulted in more efficient securities prices. Wahal and Xiang (2015) support the claim of increasingly efficient equity markets finding the change in technology as a reason in the Tokyo Stock Exchange.

But as mentioned in the theoretical background in Chapter 2 (on page 21), markets cannot be fully efficient since there then would be no incentive for actors in the market to gather information that gets embedded into prices (Grossman and Stiglitz, 1980). Grossman and Stiglitz do support the claim of ever-increasing efficiency and hence smaller profitable

opportunities from gathering information for the fund managers. The paradox is that for the market to be efficient there must be incentives to do the research to uncover the relevant information about stocks, so there will be people doing the research even though they know the value of the information may be decreasing by the second, as other do the same to gain the same advantage.

Other researcher into the declining number of profitable investment opportunities and therefore also the skill of the fund managers, show other possible explanations for the development of the industry. Pastor, Stambaugh and Taylor (2015) finds that fund managers are becoming more skilled throughout their career, but as the competition only grows stronger, they will not be able to translate the increased skill into improved fund performance.

Dumitrescu and Gil-Bazo (2017) contributes to both the factor of the skills of fund managers and how the efficiency of the market impacts the performance of mutual funds. Regarding the managerial skills of fund managers, they find that if the skills is persistent then future performance of the fund should be related to past performance, meaning that if the manager is skilled and the fund have performed good then it should continue performing well independent on if the fund have overperformed in the past. Results therefore support the claim of persistent performance amongst fund managers but does not conclude on persistence on fund performance.

Research by Dyck, Lins and Pomorski (2013) on the performance of fund managers in emerging markets suggests greater creation of value by fund managers. Hence the suggestion that when the asset market is less competitive, the market is less efficient, and there are more opportunities to discover profitable opportunities by fund managers. Hoberg, Kumar and Prabhala (2018) adds to the argumentation when showing that active funds perform better when the competition is weaker even in developed markets as in the United States.

Glode (2011) argues that both current and earlier research with common performance measures has limitations when it comes to evaluating and valuation of active management. He argues that if the performance measures used does not take into account what state the economy is in, then the skilled managers “appear to underperform passive investment strategies net of fees.” By ‘the state of the economy’ Glode describes it as either recession characterized by times of volatility and uncertainty or calm circumstances, where knowledge

and information have a greater value than in calm times. Research by Huji and Verbeerk (2009) and Cremers, Petajisto and Zitzewitz (2012) argue along the same lines by suggesting that the use of multi-factor models in academic research are systematically biased and therefore are poor benchmarks for evaluating mutual fund performance.

Kosowski, Timmermann, Wermers and White (2006) find that there are a proportion of fund managers that have skills that create value excess the fees demanded, but the trouble is to find them for the investors. In support of this finding is also Barras, Scaillet and Wermers (2010) when they used the 'false discovery' methodology when they showed that fund managers is in fact skilled and not dependent on luck. Additional research by Mamaysky, Spiegel and Zhang (2007) found that groups of funds have an alpha over 4.0% per year when controlling for estimation errors often occurring in other return-based analyses according to the authors.

There are many different skills that independently of why the investor invests in a fund makes a fund manager worth the fee, but most investor will claim that the skill of stock picking is the most important. Daniel, Grinblatt, Titman and Wermers (1997) find that funds on average picks stocks that outperforms the market, while Fulkerson (2013) in a newer study finds that this skill is decreasing throughout time, and that if the skill of stock picking is present in a fund then the skill is often limited to a specific sector or industry.

On the other hand show Jones and Shanken (2005) that funds on average do have the skill to select stocks, but the skill is not enough to make up for the expenses. As for the mentioned skill suggested by Daniel, Grinblatt, Titman and Wermers (1997) they do mention that this skill is observable over time, which should be enough to create value for investors excess of fees. A study by Chen, Jegadeesh and Wermers (2020) find that stocks purchased by funds tends to have significantly higher returns compared to stocks sold by funds, suggesting that either the fund managers are skilled at picking stocks or the signal of a fund purchasing a stock is such a good signal that the stock price increases.

There are also studies when looking at the aggregate skill of fund managers. Wermers, Yao and Zhao (2012) showed that when the aggregate holding of a stock across funds increase, the stock outperforms. While Jiang, Varbeek and Wang (2014) find that active fund managers tend to accurately predict future stock returns. They show that while stocks

overweighted by active managers outperform the underweighted stocks by 7.0% per year when adjusting for risk.

Fund managers as a group are therefore able to choose stock that increases in value, which indicated that they do have informed beliefs. Even though the mentioned studies in this paragraph do seem to show that many fund managers are skilled, it should be mentioned as Puckett and Yan (2011) concludes that the data used in most studies are quarterly holding data not capturing the trading in between quarter, giving an inaccurate or downward biased measurement of the skill.

3.1.5 Additional possible reasons for investing in actively managed funds

Actively managed funds have other attributes than returns in form of money to investors according to research. This is the conclusion in studies by both Baks, Metrick and Wachter (2001) and Pastor and Stambaugh (2002), that actively managed funds should be part of the optimal portfolio for the investor. The reason being that owning an asset in form of a mutual fund is not only to make money, but also to construct a diversified portfolio with attributes necessary to deliver the expected return given the investors attitude towards risk. The attributes of active funds works well with for example holdings of stocks, property and bonds.

A study by Jiang, Yao and Yu (2007) find that active funds have positive timing ability which is supported by Kaplan and Sensoy (2005) as they find that active fund increase their exposure to benchmark prior to positive benchmark returns. Mamaysky, Spiegel and Zhang (2008) estimates that 20% have this attribute. Other skills that should be mentioned are management of information, corporate oversight, tax management and investment approach, which all can influence the performance of a fund manager. Other relevant skills are as mentioned by Baker, Litov, Wachter and Wurgler (2010) that fund managers have the ability to predict earnings, while Nain and Yao (2013) fund that they have the ability to predict post-merger performance.

There is also weaknesses in much of the traditional research in form the usage of both data with survivorship bias and reverse survivorship bias according to Linnainmaa (2013). This research suggests that data with survivorship bias often overstate active manager skill, while data without survivorship bias understates active manager skill. By reverse survivorship bias

the researcher means that if a poorly performing fund cease to exist, their performance most likely are because of bad luck and not the lack of skill, hence the performance would increase in the future and the skill of the managers underestimated in the data without deceased mutual funds.

3.2 Research question 2: What value do active funds to investors during crisis?

The basis for the second research question and now discussion topic is as mentioned the value of active fund management during crisis. Relevant findings in research are presented and discussed upon each other, showing if or how active fund management deliver the expected results in crisis.

3.2.1 Market efficiency and the efficient market hypothesis

As mentioned both in the first discussed research question and in the chapter containing the theoretical background for the thesis, the efficiency of the markets are an important factor for active fund managers to outperform and be worth the additional cost. In literature a recession or crisis does not have a general definition but is usually defined as a period with abnormal volatility and uncertainty. When an economy is hit by a recession or crisis, research by Pasquariello (2014) suggests that there are less efficient positions taken, meaning that the market is not behaving rational. When the economy makes the markets inefficient then there are also a higher number of ‘good’ investment opportunities as there are mispricing in the markets.

Waring and Siegel (2003) suggests that when there are ineffective markets present, then active fund managers deliver value to its investors through better fund management than their benchmarks or comparable index funds. Additional research by both Kosowski (2011), and Ferson and Quan (2014) find that fund performance is dependent on the state of the economy, while von Reibnitz (2017) find that fund performance is correlated with market environment and volatility, all three mentioned articles concludes that the state of the economy has an impact on the performance of funds.

Basak, Shapiro & Tepla (2006) highlight multiple important dimensions of the fund manager that should be taken into consideration to some degree. The study demonstrates how a risk

averse portfolio manager optimally under- or overperforms a target benchmark under different economic conditions, depending on his attitude toward risk and choice of benchmark. The analysis therefore illustrates how investors can achieve their desired performance profile for funds under management through an appropriate combined choice of the benchmark and money manager.

In addition to Waring and Siegel (2003), research by Von Reibnitz (2017) find that in periods with high dispersion or volatility in the market, the market offers more profitable investment opportunities for the skilled managers that can find them, resulting in that some fund managers perform better during times of higher dispersion and thus also volatility. Regarding performance of funds in markets with less efficiency, Dumitrescu and Gil-Bazo (2017) show that in markets with less sophisticated investors there are higher dispersion in expected returns compared to markets with more sophisticated investors.

Research by Dyck, Lins and Pomorski (2013) found similar results when results suggest that the outperformance of mutual funds depends on the underlying market efficiency, which as mentioned is lower in times of crisis. As a link to how the skills of active managers can be of use to investors in times of volatility and/or uncertainty there has also been studies into the skill of stock picking, often valued as the most important skill for a fund manager.

On the skills of active fund managers Duan, Hu and McLean (2009) find that active fund managers have greater stock selection ability among stocks with high idiosyncratic volatility, where idiosyncratic volatility is defined as “the part of the variation in returns that cannot be explained by the particular asset-pricing model used” (Aabo, Pantzalis and Park, 2017). Busse (1999) show that fund managers also have the skill to time changes in market volatility, hence understanding when the volatility will be a factor and how to use it to the funds advantage.

In regards to why active mutual funds might show a bigger value to its investors, or perform better in general Schmalz and Zhuk (2012) found that stocks react up to 70.0% more to news in recessions compared to in upturns. Their study is done by using news about earnings and show that there are a skewness present. The reason for the strong reaction being the higher marginal utility in downturns and that in upturn a single news might not change much as the whole economy is in an expansion.

Research comparing performance in recessions and expansion by Kacperczyk, van Nieuwerburgh and Veldkamp (2016) find that during the period from 1980 until 2005, fund alphas are from 1.6% and 4.6% higher per year in recessions compared to expansion. Both Wermers (2000) and Moskowitz (2000) find that the performance of mutual funds from their stock based holdings are higher during recessions than during expansion in the period from 1975 to 1994. Additionally Moskowitz (2000) find that when comparing gross and net returns, mutual funds generate 6.0% more in recession periods than in non-recession periods.

In another sector Kallberg, Liu and Trzcinka (2000) use mutual funds consisting of real estate when they find that when the asset market is performing poorly it is more likely to find positive alphas. This conclusion suggests that the mutual fund adds more value in down market compared to up markets, taking advantage of a market that is performing poorly.

The actively managed funds can in addition to adding value to its investors, also be a part of an important mechanism in the economy and thus of value to more entities than their investors. Gärleanu and Pedersen (2018) find that active funds serve a function in the economy when they demand a fee for letting investors invest in the fund, this is because by demand a fee the funding is allocated towards the funds by investors willing to pay the premium. In addition, Wermers (2019) showed that the active funds also is useful for correcting mispricing in the market, although it is done at a price. Having active funds as an alternative in the market therefore benefit all investors in the market. The fee collected by the actively managed funds can be seen as a price to get correct prices in the market, as the active funds do thorough research into both individual stocks and markets in a bigger context.

There are also findings of different types of funds and how their performance during recessions. The findings of Pastor and Vorzatz (2020) suggests a link between fund performance and sustainability during recession. Additional findings by Nofsinger and Varma (2014) find that “socially responsible mutual funds tend to outperform during periods of market crises.” The sustainability ratings were introduced by Morningstar in 2016 and is ranking the funds according to the criteriums of environmental, social and corporate governance challenges with a five-globe ranking system from bottom to top of the given industry (Hale, 2016).

Ding et al (2020) and Alburquerque (2020) report similar findings in the start of 2020 observing that funds with high environmental and social ratings earn comparatively high returns on both firms and funds in the period. Pastor and Vorzatz (2020) suggests that the mutual fund investor trend to invest in sustainability-oriented funds in the 2010s continue both before and during the current Covid-19 crisis as also found by Bialkowski and Starks (2016), and Hartzmark and Sussman (2019).

3.2.2 Utility of active managers

The value of an active fund manager is not just measured in dollars, but also in how much value in form of utility the investor is perceived to receive by owning the active fund. Studies by Ferson and Schadt (2016) and Glode (2011) considered the value of active fund management when taking into account the marginal utility of consumption in times of uncertainty and found that the value rose as consumption went down and the consumers were less risk taking.

Kosowski (2011) concludes that active managers add value to its investors by outperforming during recessions. This might be explained by a combination of increased positive investment opportunities as mentioned above, and the skills fund managers should inherit. De Souza and Lynch (2012) and Moskowitz (2011) found that active fund managers show better decision making skills during recessions. The studies also show a correlation between active return and a higher marginal utility for investors in recessions.

Findings by Kosowski (2011) show that there are investors willing to pay the premium for active funds that correlate negatively with consumption, assuming the fund they invest in is supposed to have superior performance during recessions. The problem for investors though, is that paying the premium does not necessarily get the investor access to the skilled managers (Gruber, 1996; Wermers, 2000).

The results of Kosowski (2011) complement the findings of Moskowitz' (2001) suggesting that the correlation between domestic equity fund strategies increase in periods when the economy is in a recession. An additional study by Kosowski (2006) suggests that the traditional unconditional performance measure understate the value added by active mutual fund managers in recessions and that active funds show evidence of underperformance in expansion periods, while they in recessions provide a diversified position without underperforming the benchmarks.

Coval and Moskowitz (2001) find that fund managers that invest locally, or closer to their origin, perform better due to the informational advantage. The informational advantage can be closely linked to the research active managers are known for doing, where the information they gather is meant to give them an advantage in the market, making their fund perform better than each funds specific benchmark. As to how the proportion of assets invested in locally and non-locally when a recession or crisis is expected, studies by Coval and Moskowitz (2001), and Brautaset and Torset (2020) suggest that fund managers usually allocate more of the assets locally.

3.2.3 The 'insurance' argument

The 'insurance'-argument or hedge-argument is as mentioned in the introduction and theoretical background chapter the use of actively managed fund as a form of insurance or hedge in case of recessions. If that hypothesis is correct then the active fund of choice to invest in should either be negatively correlated with the market to get a diversification effect (assuming part of the total assets are invested in assets that correlated with the market), or have a fund manager skilled enough to manage the fund to increase in value even with a recession in the economy through choices of investment, skills of timing etc.

Research by both Carhart (1997) and Malkiel (1995) show that higher fees only leads to lower performance, hence the conclusion that skilled manager do not exist. Glode (2011) on the other hand find that when using risk-adjusted returns and not unadjusted performance for risk, the higher fee funds have a better risk-adjusted return during recessions. This suggests that the funds that do demand the high fee might actually have a value when the crisis come.

On how the active funds behave research by Petajisto (2013) show that funds lower their active share when expecting or experiencing crisis or recessions. He uses the period around 2003 as an example of a stable economy in recovery for when the active share is higher or rising, and 2006 as an example of a time when uncertainty is spreading because of the sub-mortgage crisis developing in the United States and the active share is getting lower as the fund gets more 'index-hugging'. Investing in active mutual funds hence does not necessarily give the investor a hedge, but could increase the exposure to the market.

The finding of a lower active share during crisis is also supported by Smørgrav and Næss (2011) in a study on the Norwegian mutual fund market. As discussed in the first research question there are uncertainties when it comes to the use of active share, as an overuse or

assumption of performance because of a high active share not necessarily is true. The general point of view is either way that funds having a low active share tend to underperform (Cremers & Petajisto, 2009).

Findings by Gottesman, Morey and Rosenberg (2013) support the findings of Petajisto (2013). Their study show that in up markets there are a strong relationship present between the fund performance and the flows in subsequent inflow, while in down markets the extent of over- or underperformance does not seem to affect the fund flows in the following years. Hence there is an incentive for active fund managers to "closet index" during down markets as they are not rewarded for the possible outperformance during the current market status.

Contrary, a study by Cederburg in 2008 enlightens the subject of investor behavior during recession. The study finds that instead of chasing results the investor is most concerned with managing their exposure to the market when the economy is in or is heading towards a recession, with economic conditions being poor, ergo not chasing profits but safety.

A study Polkowichenki, Wei and Zhao (2012) find that active mutual funds can serve a purpose if the investor want to reduce the downside risk and capture upside potential. As this study claim a rational investor will want to have an actively managed fund in the portfolio as he/she gets a hedge on the downside risk, unlike the counterpart in form of a passive fund.

Additional studies by Agarwal, Boyson and Naik (2009) and Clifford, Jordan and Riley (2013) fund that mutual funds that attempt to use a hedge fund style strategy are unable to replicate the returns of actual hedge funds, suggesting that mutual funds acting as hedge funds might not be as good an idea than the intuition or though process of regular investors think.

Huang and Wang (2010) did a study following the financial crisis of 2008 on the hedge fund-like mutual funds. This study is relevant in the argument about active mutual funds being used as a hedge against recessions by investors. The funds involved in the study is constructed as a mutual fund acting as a hedge fund, meaning it has taken position as a hedge fund would. The study concludes that the hedge fund-like mutual fund does not add any value for investors, but the study also shows or support the claim of genuine skills by the top performing fund managers, not due to any form of luck or coincidence.

3.3 Research question 3: The use of active share

Active share is as defined in the chapter on theoretical background the percentage in which the fund is deviating from its benchmark, usually an index following the specific sector etc. A high active share therefore means the fund is deviating a lot from the benchmark. The use of active share in recent literature, and especially as a predictor for future performance is debated and questioned.

A study by Cremers and Petajisto (2009) conducted on 2647 American mutual funds found that funds with a high active share tend to yield a positive alpha while fund with a lower active share underperforms, the alpha calculated using the reference index that shows the lowest active share. The table below show the results using both the active share and tracking error quantile. Specifically do funds with high active share has a positive alpha of 1.15% when accounting for fees, while the funds with the lowest active share have a negative alpha of 1.83% after fees.

Net equal-weighted alphas for all-equity mutual funds in 1990–2003

Active Share quintile	Tracking error quintile						
	Low	2	3	4	High	All	High-Low
	Panel B: Four-factor alpha of benchmark-adjusted return						
High	1.44	0.79	0.48	2.72	0.29	1.15	−1.15
	(1.79)	(1.02)	(0.68)	(3.17)	(0.22)	(1.86)	(−0.74)
4	−0.11	−0.91	−0.88	−1.52	−1.64	−1.02	−1.53
	(−0.22)	(−1.17)	(−1.23)	(−1.63)	(−1.33)	(−1.63)	(−1.08)
3	−1.05	−1.41	−1.58	−2.25	−2.86	−1.83	−1.81
	(−1.97)	(−2.15)	(−2.34)	(−2.23)	(−2.51)	(−2.84)	(−1.59)
2	−1.46	−1.47	−1.82	−2.67	−3.43	−2.18	−1.97
	(−3.31)	(−2.29)	(−2.99)	(−3.31)	(−3.61)	(−4.00)	(−2.17)
Low	−1.29	−1.36	−1.66	−2.26	−2.57	−1.83	−1.28
	(−4.80)	(−4.80)	(−4.33)	(−4.43)	(−3.73)	(−5.01)	(−2.13)
All	−0.50	−0.87	−1.09	−1.20	−2.05	−1.14	−1.55
	(−1.45)	(−2.13)	(−2.58)	(−1.81)	(−2.28)	(−2.53)	(−1.68)
High-Low	2.73	2.16	2.13	4.99	2.86	2.98	
	(3.33)	(2.52)	(2.61)	(5.60)	(2.26)	(4.51)	

Funds are sorted by the two dimensions of active management. The measures of active management are computed as before. Net fund returns are the returns to a fund investor after fees and transaction costs. Index funds are excluded from the sample. The table shows annualized returns, followed by *t*-statistics (in parentheses) based on White's standard errors.

Table 2: Table by Cremers and Petajisto (2009)

The study used both the active share and tracking error measurement as measurements on activity. The results are computed using excess return and Carharts four factor model,

suggesting also that active share and tracking error can be looked upon as measurements of stock picking and factor timings, which are skills mentioned in the theoretical background. Cremers and Petajisto concludes that active share can be used as a measurement to predict future performance, and that the majority of big funds are 'closet indexers' while smaller funds are more active.

Petajisto (2013) builds on the study by himself and Cremers (2009) with increasing the number of years by six, and instead of using the reference index with the lowest active share, computing the alpha using the reference index the funds themselves set in their prospectus. When the results are adjusted for fees the 'closet indexer' perform below the benchmark, while the funds with a higher active share perform 1.26% above their benchmark per year. He also point out that the average active fund does not beat the benchmark, thus there are opportunities to the use of active share if the investor is informed enough or have other methods that can identify the active funds that consistently perform above their benchmark adjusted for fees.

Cremers et al. (2015) investigated the effect of the increasing amount of index fund on active funds globally. The study defines funds with an active share of 60% or above as "truly active", and the funds with active share measured below 60% as "closet indexers". Results using a four factor model by Ferreira, Keswani, Miguel and Ramos (2013) is that the active funds with an active share of 60% or above outperform the reference or benchmark index by 1.05% per year. Regarding what effect the increasing number of index funds have, show that active funds increase the active share and often lower fees as a result of the competition from index funds. The study find support in using active share as a predicator for future performance, as from Cremers and Petajisto (2009). Cremers et al. show that the size of the markets are crucial for investors to be able to get lower fees, and that if the market lacks size and therefore also competition, the investors will in principle buy 'closet indexers' to a higher rate. The 60% limit to what is counted as an truly active funds is debatable, and other percentages have been used in other studies or master thesises (Smørgrav and Næss, 2011; Hovstad and Langedal, 2018).

Both Smørgrav and Næss (2011), and Storm and Johansen (2015) conducted research in the Norwegian fund market, a market not comparable in size to those used in the studies mentioned above. Smørgrav and Næss (2011) find that using both active share and tracking error is not optimal in a small market where the measurements are strongly correlated. By

classifying the funds in three classes according to the amount of active share, they found that the third with the highest active share have an alpha of 1.86%. Additional findings show that funds that are both large in size and active share perform the best. Storm and Johansen used the R^2 method on a hypothesis that active management could predict future performance with the mentioned four factor model by Carhart. Their finding do not prove any statistically significant relationship between the level of activity and alpha.

An additional study by Cremers and Pareek (2016) the effect of outperformance because of a higher active share is stronger when the fund manager is considered to be patient in the market, meaning not having 'hot hands'. Along the same lines Cremers, Fulkerson and Riley (2018) studied the link between accurately selecting the benchmark for the prospectus of the fund, i. e. the manager of the fund knows very well what the fund is up against when it comes to performance. The research show outperformance amongst funds with a high active share and a precisely chosen benchmark for the prospectus. Doshi, Elkamhi and Simutin (2015) find that when the difference between the actual portfolio and the value-weighted portfolio of the fund increases, the performance increases as well.

Both Cohen, Leite, Nielson and Browder (2014) and Frazzini, Friedman and Pomorski (2016) on the other hand, question and warn about the use of active share as a form of predictive power for fund performance, as proposed by multiple studies in recent years. Cohen, Leite, Nielson and Browder (2014) question both the use of active share, both in investment and in research, in addition to suggesting weaknesses in the measurement. As mentioned both by Cremers and Petajisto (2009), and Cremers et al. (2015) are the size and efficiency of the market a factor when using the active share measurement, but Cohen et al (2014) find that the active share measurement may not be consistent across different market-cap sizes. The study find that in addition to the correlation between excess return and active share, there are also higher levels of dispersion in returns and higher downside risk. They also find that for large-cap managers the mentioned relationship between active share and excess return are driven by small-cap portfolio exposures. As to the use of active share as a measurement used when evaluating or choosing fund managers the researchers claim that one should be careful when distinguishing between what is a result of the skill of the manager and what is a result of the active share, or the eventual combination.

Frazzini, Friedman and Pomorski (2016) also claim that the "empirical support for the measure is not very robust." with a study that contradicts most of the findings of both

Cremers and Petajisto on the subject. Frazzini, Friedman and Pomorski (2016) use the same dataset and methodology as Cremers and Petajisto (2009) but controlling for differences in benchmark returns. The study concludes that there are no form of statistical evidence that funds with either high or low active share differ, and thus should not be used to predict outperformance or evaluate skill. The authors mention that active share should be used for evaluating costs as it seems many 'active' funds are 'closet indexers' and therefore have too high fees compared to the competitors in form of index funds and not actively managed funds. On the other hand, both Petajisto (2016) and Cremers (2017) question the last mentioned studies shortcomings in form of methodology and interpretation of results.

Findings by Gottesman, Morey and Rosenberg (2013) support the findings of Petajisto (2013) showing a lower active share when experiencing or expecting a recession in the economy. Their study show that in up markets there are a strong relationship present between the fund performance and the flows in subsequent inflow, while in down markets the extent of over- or underperformance does not seem to affect the fund flows in the following years. Hence there is an incentive for active fund managers to "closet index" during down markets as they are not rewarded for the possible outperformance during the current market status.

A weakness of the use of active share is that it is not always possible to compute, and that the data is usually reported quarterly meaning that what is reported at the end of the quarter does not necessarily give a correct picture of the positions taken by the specific fund through the given months. In addition given fewer available data points through time the longer observations are needed to be able to spot trends. As pointed out by Smørgrav and Næss (2011) regarding the use of both active share and tracking share, tracking share focuses more on the alpha bets against market timing compared to active share that focuses equally on all bets made. The bets made by a mutual fund can although be diversified making active share a good measurement for stock selection.

4. Results

The results from the meta-analysis and discussion used to answer the main- and sub-research questions will be presented individually below, before a summary of the results are presented at the end of the chapter.

4.1 The value of active funds

As presented in the discussion part above on pages 33 until 53 the first research question is divided into three separate parts. With each part being discussed at dept using both the 'conventional view' and newer research with further developed methodologies building on the previous research.

Starting with the statement that to add value to the investors portfolio, the average active fund cannot underperform after fees. The early research into the performance of funds show that in the long run, mutual funds does either generate a negative or non-positive alpha when accounting for fees when doing the calculation (Jensen, 1968; Ippolito, 1989; Gruber, 1996; Davis, 2001), therefore not adding value to its investors. Studies by Wermers (2000) show that funds with active managers perform better than the benchmark, but when taking fees into account the performance is 1.0% short of breaking even.

Of the more recent research the conclusion differ much more than the earlier research. Cremers and Petajisto (2009) find that the mutual funds should be divided into funds with high and low active share, as the funds with a high active share tend to yield a positive alpha while those with a low active share underperforms. To have a high active share while at the same time being patient is the optimal fund form to obtain excess return according to Cremers and Pareek (2016). Kosowski, Timmermann, Wermers and White (2006) conclude that there are in fact fund managers with skills good enough to cover their costs, and that the trouble is more to uncover who these fund managers are to invest in their funds.

As for the discussion regarding persistence among the best funds, the basis of the discussion being Carharts (1997) study using survivorship bias-free data when finding persistent performance among the bad funds, but not for the better performing funds. The use of survivorship bias-free data will show inaccurately performance as the still operating funds necessarily will have performed better than non-operational funds today, and show an

inaccurately persistent performance of living funds (Elton, Gruber and Blake, 1996; Brown, Goetzmann, Ibbotson and Ross, 1992). Other studies by Malkiel (1995) finds no persistence performance after 1970.

The more recent research shows results of persistence in form of Berk and van Binsbergen (2015) finding an outperformance of 0.36% above index for active funds not accounting for fees, while Kosowski, Timmermann, Wermers and White (2006) developed the methodology of Carhart (1997) even further and found persistence performance among fund managers. The weaknesses of the measurement of performance with for example alpha is also highlighted by Berk and Green (2004) pointing out that the alpha is determined in equilibrium by competition between managers, and not the skill of managers.

And last the argument that fund managers are skilled, but there are very few fund managers that are skilled excess of costs. The traditional view of this statement is based upon a study Fama and French (2010) finding that the cost to gaining access to the skilled fund managers is too high to cover the excess returns, supported by Barras, Scaillet and Wermers (2010) when finding that only 0.6% of funds do have skills in excess of return. Studies find that the increasingly efficient markets throughout time makes in increasingly hard to find profitable investment opportunities for fund managers, making the proportions of fund managers described as skilled smaller and smaller (Bernstein, 1998; Chordia, Roll and Sybrahmanyam, 2008; Conrad, Wahal and Xiang, 2015). Dyck, Lins and Pomorski (2013) suggests that the fund managers are still skilled, and can prove that as their performance is better in emerging markets with a lower degree of efficiency. Pastor, Stambaugh and Taylor (2015) find that managers increase in skill throughout their careers, making the reverse survivorship-bias an even stronger argument as fund managers will not be able to prove themselves.

Weaknesses of research done up to this point is pointed out by Glode (2011), Huji and Verbeek (2009) and Cremers, Petajisto and Zitzewtix (2012) suggesting that using the multi-factor models are systematically biased and that the state of the economy should be taken into consideration. Linnainmaa (2013) further investigates the survivorship bias-problem to conclude that data with survivorship bias overstate active manager skill while data without understates the active manager skill. Kosowski, Timmermann, Wermers and White (2006) suggests that there are a proportion of fund managers that have skills in excess of fees, while Barras, Scaillet and Wermers (2010) found that fund managers are in fact skilled and not dependent on luck. Mamaysky, Spiegel and Zhang (2007) found a positive alpha of 4.0% per

year for groups of funds when controlling for estimation errors. Other research by Daniel, Grinblatt, Titman and Wermers (1997) found that the average fund pick stocks that outperform the market, but this skill is not enough to cover the fees demanded. Fulkerson (2013) find that this skill is decreasing throughout time and that the skill is 'limited' to specific sectors or industries. Daniel et al (1997) also find that the skill to pick stocks is observable over time and should be enough to create value to investors.

4.2 Active funds in crisis

The results for the second research question can as from the discussion chapter be divided into two parts. First of all there a set of conditions that greatly help the active mutual fund managers to perform at the top of their possible skill level. Secondly, many studies dive into what kind of skills is most useful for fund managers during times of volatility, typically a recession or another form of economic crisis.

The basis for the conditions that work in favor of active mutual fund managers is that when the economy is hit by a recession, there are less efficient positions taken in the market giving the active fund managers the opportunity to create value to its investors (Pasquariello, 2014). Waring and Siegel (2003) support this claim when concluding that it is when there are inefficient markets present that the active fund managers creates value for its investors. It should be mentioned that there are some disagreement in literature on how strong the effect of the state of economy is on the performance of mutual fund managers.

On the other hand, there is agreement that the performance of funds is in some form dependent on the state of the economy, or that the state of the economy has an impact on the performance of mutual funds (Kosowski, 2011; Ferson and Quan, 2014. Von Reibnitz (2017) concludes that fund performance is correlated with market environment and volatility, with additional findings on how the amount of positive investment opportunities increase in periods with high dispersions. Thus showing that some fund managers do have the skills to find those increased positive investment opportunities.

As for the second part of the answer to the research question about the skills of fund managers, the literature show a couple of different answers that should be mentioned. Kosowski (2011) conclude that active fund managers outperform during recessions, and is therefore contributing value to its investors. Additional research by De Souza and Lynch

(2012) and Moskowitz (2011) show that fund managers show better decision-making skills during recessions. This is closely linked with the increased number of positive investment opportunities present in the market as mentioned above.

An often mentioned reason to choose actively managed mutual funds it to have a form of insurance or hedge in case of a recession hitting the economy. This argument was originally stamped as a myth as both Carhart (1997) and Malkiel (1995) concluded that higher fees only lead to lower performance. Glode (2011) on the other hand find that when using risk-adjusted returns the higher fee funds perform better during recessions.

4.3 Active share

Active share is in literature mostly looked upon in a positive view as studies by Cremers and Petajisto (2009), Petajisto (2013) and Cremers et al. (2015) indicate that funds with a high active share perform better compared to funds with a lower active share. The calculations being done on the same dataset with different scopes in time and comparable returns from benchmark or index.

Cremers and Petajisto (2009) find that when the funds have a high active share they yield a positive alpha, while lower active share-funds underperform. They conclude that active share can be used as a measurement of both stock picking and factor timing, suggesting that active fund managers have skills that shows in the active return of the mutual fund and that active share can be used to predict future performance of said fund. Petajisto (2013) find that funds with a higher active share outperform the benchmark by 1.26% per year, while also finding that the average actively managed mutual fund does not beat the benchmark highlighting the problematic question on how to identify the skilled active managers. Cremers et al. (2015) when defining active funds as funds with an active share of 60 % or above, find that the active funds perform 1.06 % above their competing index.

Compared to results in smaller markets as in Norway, Smørgrav and Næss (2011) find that the third of funds with the highest active share have an alpha of 1.86 %, and that the funds with both size and high active share perform the best. The studies above therefore seem set on active share being a good measurement for future performance, and to some degree the skill of fund managers.

Cohen et al (2014) on the other hand question the use of active share as a performance measure suggesting that the returns are a combination of skill and active share and the link between the two is not flagrant. Cohen et al. also show that there is a correlation between excess return and active share, but also that with a higher active share follows increased dispersion of returns and downside risk. An additional weakness is the weakness of active share effect when the fund is growing above a threshold, meaning that it is hard to deliver excess return and an active share on a given level when the fund is necessarily big. Frazzini, Friedman and Pomorski (2016) find that using the same data set and methodology as Cremers and Petajisto (2009) there is no statistical significant difference between high- and low active share funds, suggesting that active share is not a good measurement for either performance of fund and manager or skill.

5. Conclusion

5.1 Findings

The literature on fund management is as a whole divided on the value of active fund management. As a starting point there are clearly many active mutual funds that are not creating value for its investors, the reason being either lack of skill by the fund manager or a fee too high for the fund manager to cover with his/her skills. It is clear that there are skilled fund managers, but the percentage is low, hence they might be hard to find with normal information. Researchers seem to agree on the possibility of persistent performance among both well and bad performing mutual funds over time. Recent research has also shown that under a set of conditions during high volatility active managers should outperform passive mutual funds as there are more positive investment opportunities to exploit in the market. Several studies prove that there are skilled fund managers in the market, and that their skill persists over time. Although there are skilled fund managers there is also trouble when investors search to find the fund managers worth the fee to gain access.

As for the second part or sub-research question literature is as divided in crisis as in normal or calm times. Continuing from the above section there are a greater number of positive investment opportunities when the market is inefficient, as it is in crisis or recessions. Active fund managers should therefore have a greater performance during crisis, which is something literature seem to find in many cases. Literature also find that active mutual funds often move closer to their benchmark or index fund as the uncertainty rises in the economy to remove some of the downside risk. Studies have also found that active mutual funds outperform passive funds when taking risk into account, showing that active mutual funds and active fund manager are able to create value for investors during recessions. There is also reports that show that active funds should be part of an investors portfolio the reason being active mutual funds have utility to the investor and having other attributes than the other assets said investor should hold in the portfolio such as index fund, real estate, money market funds, savings, FX etc.

Through research there has been found an indication of higher performance with a positive alpha in funds with a high active share compared to those with a lower percentage who tend to underperform. Further research has suggested that active share can be used as a predictor

for future performance or a performance measurement, something that is debatable but interesting. Weaknesses of both the research using active share and use of active share as a performance and activity measurement is that with greater excess return follows greater dispersion of returns and a larger downside risk.

5.2 Robustness

On incubation bias: It is unclear when and how much of the data material used in the analysis in all studies used in this meta-study. Evans (2010) points out the weakness of incubation bias, "a bias that can appear if researchers analyze historical data with a delay that would allow the bias to creep in." The solution to avoid mentioned bias is to exclude young funds. As mentioned in both the chapter on theoretical background and in the discussions, both survivorship bias and reverse survivorship bias is worth mentioning.

The analysis and research from which this thesis is based upon use both data free of survivorship bias and reverse survivorship bias, as one might follow the other. The studies using survivorship bias free data are using data with both operating mutual funds, and does not remove mutual funds that have stopped operating some time over the observation period. If the data sets had been without non-operating funds today, the data would understate the performance of currently operating funds, while with the dead funds will overstate the performance of existing funds. Researchers such as Linnainmaa (2013) point out the weakness of reverse survivorship bias as it is assumed that the mutual funds that cease to exist are the ones performing worse than others, while the performance of said fund manager might as well be unlucky and not unskilled. The poorly performing fund is therefore most likely to perform better in the future, but will not be observed together with its fund manager in the future as the fund has ceased to exist.

5.3 Suggested future research

The subject of fund management and its implications during crisis is likely to evolve massively the coming years. As this thesis is written in the autumn of 2021 from August until November (/December) I expect there to be extensive data sets available about the Covid-19 crisis available the coming months. For the future research I would suggest research into both what is weighted most important for active fund managers in crisis, and

into what the investors claim is the most important. Some research have been done into how the active managers should move closer to the index when in a recession or crisis, but it is unclear to which extent investors favor this behavior as they would want an active fund to take position to gain revenue and not only cut losses as the index will likely move strongly. The investors risk aversion is also an interesting subject.

Researchers have mentioned that the mutual funds that are claimed most active and with the highest fees are also the funds that are being marketed the "hardest". The providers of funds are naturally most keen on selling the most expensive funds even if they don't necessarily perform the best seen from the investors perspective. There should be done further research into these funds as it is not rational for investors to invest in those compared to index funds or cheaper actively managed funds. By this I suggest that there should be done further research both into groups of different forms of mutual funds, and into groups based on the fees demanded from investors.

References

Aabo, Tom, Pantzalis, Christos and Jung Chul Park. 2017. Idiosyncratic volatility: An indicator of noise trading? *Journal of Banking & Finance* (75): 136-151.

Agarwal, Vikas, Nicola Boyson and Narayan Naik. 2009. Hedge funds for retail investors? An examination of hedged mutual funds. *Journal of Financial and Qualitative Analysis* (44): 273-305.

Albuquerque, Rui A., Koskinen, Yrjo, Shuai Yang and Chendi Zhang. 2020. Love in the time of COVID-19: The resiliency of environmental and social stocks. Working Paper, Boston college.

Amihud, Yakov, and Ruslan Goyenko. 2013. Mutual fund's R^2 as predictor of performance. *Review of Financial Studies* (26): 667-694

Ang, A. 2014. Asset Management: A systematic approach to factor investing. New York, United States of America: Oxford University Press.

Anspach, Dana. 2021. What Is Strategic Asset Allocation? The Balance, https://www.thebalance.com/what-is-strategic-asset-allocation-2388300

Baker, Malcolm, Lubomir Litov, Jessica Wachter, and Jeffrey Wurgler. 2010. Can mutual fund managers pick stocks? Evidence from their trades prior to earnings announcements. *Journal of Financial and Quantitative Analysis* (45): 1111-1131.

Baks, Klaas, Andrew Metrick, and Jessica Wachter. 2001. Should investors avoid all actively managed funds? A study in bayesion performance evaluation. *Journal of Finance* (56): 45-85

Banton, Caroline. 2021. An introduction to US Stock Market Indexes. Investopedia, https://www.investopedia.com/insights/introduction-to-stock-market-indices/

Barone, Adam. 2020. Tactical Asset Allocation (TAA). Investopedia, https://www.investopedia.com/terms/t/tacticalassetallocation.asp

Barras, Laurent, Olivier Scaillet and Russ Wermers. 2010. False discoveries in mutual fund performance: Measuring luck in estimated alphas. *Journal of Finance*, 65 (1): 179-216.

Basak, Suleyman, Alex Shapiro, and Lucie Teplá. 2006. Risk Management with Benchmarking. Management Science, forthcoming.

Berk, Jonathan, and Jules H. van Binsbergen. 2015. Measuring skill in the mutual fund industry. *Journal of Financial Economics*, 188 (1): 1-20.

Berk, Jonathan, and Richard Green. 2004. Mutual fund flows and performance in rational markets. *Journal of Political Economy* 122, 1269-1295.

Bernstein, Peter L. 1998. Where, oh where are the hitters of yesteryear? *Financial Analysts Journal*, 54 (6): 6.

Bialkowski, Jedrzej, and Laura T. Starks. 2016. SRI funds: Investor demand, exogenous shocks and ESK profiles. In *working paper*.

Bodie, Zvi, Alex Kane, and Alan Marcus. 2018. *Investments.* New York, McGraw-Hill Education. P. 338-339.

Bollen, Nicolas, and Jeffrey Busse. 2001. On the timing ability of mutual fund managers. *Journal of Finance* (56): 1075-1094.

Bollen, Nicolas, and Jeffrey Busse. 2005. Short-Term Persistence in Mutual Fund Performance. *The Review of Financial Studies* 18 (2): 569-597.

Brown, Stephen J., and Willian N. Goetzmann. 1995. Performance persistence. *The Journal of Finance*, 50 (2): 689-698.

Brown, Stephen J., Juan Sotes-Paladino, Jianguo (George) Wang, and Yaqioung Yao. 2017. Starting on the Wrong Foot: Seasonlity in Mutual Fund Performance. *Journal of Banking & Finance* 82: 133-150.

Busse, Jeffrey. 1999. Volatility timing in mutual funds. Evidence from daily returns. *Review of Financial studies* 12: 1009-1041.

Busse, Jeffrey, and Paul Irvine. 2006. Bayesian and mutual fund persistence. *Journal of Finance* 61: 2251-2288.

Carhart, Mark M. 1997. On persistence in mutual fund performance. *The Journal of Finance* 52 (1): 57-82.

Cederburg, S. 2008. Mutual fund investor behavior across the business cycle. SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1107014

Chen, Li-Wen, and Fan Chen. 2009. Does concurrent management of mutual and hedge funds create conflicts of interest? *Journal of Banking & Finance* 33: 1423-1433.

Chen, Hsiu-Lang, Narasimham Jegadeesh, and Russ Wermers. 2000. The value of active mutual fund management: An examination of the stockholdings and trades of fund managers. *Journal of Financial and Quantitative Analysts* 35: 343-368.

Chordia, Tarun. 1996. The structure of mutual fund charges. *Journal of Financial Exonomics*, 41(1): 3-39.

Chordia, Tarun, Richard Roll, and Avanidhar Subrahmanyam. 2011. Recent trends in trading actively and market quality. *Journal of Financial Economics* 101: 243-263.

Cohen, Tim, Brian Leite, Darby Nielson, and Andy Browder. 2014. Active share: A misunderstood measure in manager selection. In *Fidelity research*.

Conrad, Jennifer, Sunil Wahal, and Jin Ziang. 2015. High-frequency quoting, trading, and the efficiency of prices. *Journal of Financial Economics* 116: 271-291.

Coval, Joshua D., and Tobias J. Moskowitz. 2001. The geography of investment: Informed trading and asset pries. *Journal of Political Economy* 109 (4): 811-841.

Cremers, Martijn. 2017. Active share and the three pillars of active management: Skill conviction, and opportunity. *Financial Analysts Journal* 73 (2): 61-79.

Cremers, Martijn, Miguel Ferreira, Pedro Matos, and Laura Starks. 2011. The mutual funds industry worldwide: explicit and closet indexing, fees, and performance. SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1830207

Cremers, Martijn, Joost Driessen, Pascal Maenhout, and David Weinaum. 2009. Does skin in the game matter? Director incentives and governance in the mutual fund industry. *Journal of Financial and Quantitative Analysis* 44: 1345-1373.

Cremers, Martijn, Jon A. Fulkerson, and Timothy B. Riley. 2019. Challenging the Conventional Wisdom on Active Management: A Review of the Past 20 years of Academic Literature on Actively Managed Funds. *Financial Analysts Journal*, vol 75, no. 4, fourth quarter 2019.

Cremers, Martijn, Jon A. Fulkerson, and Timothy B. Riley. 2021. Active Share and the Predictability of the Performance of Separate Accounts. *Financial Analysts Journal*, forthcoming.

Cremers, Martijn, and Ankur Pareek. 2016. Patient capital outperformance: The investment skill of high active share managers who trade infrequently. *Journal of Financial Economics* 122: 288-306.

Cremers, Martijn, and Antti Petajisto. 2009. How Active is your Fund Managers? A New Measure That Predicts Performance. SSRN, https://academic.oup.com/rfs/article/22/9/3329/1574080

Cremers, Martijn, Antti Petajisto, and Eric Zitzewitz. 2012. Should benchmark indices have alpha? Revisiting performance evaluation. *Critical Finance Review* 2: 1-48.

Curry, Benjamin, and E. Napoletano. 2020. "What is an expense ratio?" Forbes. https://www.forbes.com/advisor/investing/what-is-expense-ratio/

Dahlquist, Magnus, Stefan Engstrom, and Paul Soderling. 2000. Performance and Characteristics of Swedish Mutual Funds. *The Journal of Financial and Quantitative Analysis* 35 (3): 409.

Daniel, Kent, Mark Grinblatt, Sheridan Titman, and Russ Wermers. 1997. Measuring Mutual Fund Performance with Characteristic-Based Benchmarks. *Journal of Finance* 53 (3): 1035-1058.

Davis, James L. 2001. Mutual fund performance and style. *Wall Street Journal* 57: 19-27.

De Souza, André, and Anthony W. Lynch. 2012. Does Mutual Fund Performance Vary over the Business Cycle? National Bureau of Economic Research, August 201(No 1).

Del Guercio, Diane, Egemen Genz, and Hai Tran. 2018. Playing favorites: Conflicts of interest in mutual fund management. *Journal of Financial Economics*, forthcoming.

Doshi, Hitesh, Redouane Elkamhi, and Mikhail Simutun. 2015. Managerial activeness and mutual fund performance. *Review of Asset Pricing Studies* 5: 156-184.

Duan, Ying, Gang Hu, and David McLean. 2009. When is stock picking likely to be successful? Evidence from mutual funds. *Financial Analysts Journal* 65: 55-66.

Dumitrescu, Ariadna, and Javier Gil-Bazo. 2017. Market frictions, investors sophistication, and persistence in mutual fund performance. SSRN, http://dx.doi.org/10.2139/ssrn.2060067

Dyck, Alexander, Karl V. Lins, and Lukasz Pomorski. 2013. Does Active Management Pay? New International Evidence. *The Review of Asset Pricing Studies*.

Elton, Edwin J., Martin J. Gruber, and Cristopher R. Blake. 2013. The performance of separate accounts and collective investment trusts. *Review of Finance* 59: 261-288.

European Securities and Markets Authority. 2017. ESMA Report on Trends, Risks and Vulnerabilities. In *Technical Report 2.*

Evans, R. 2010. Mutual fund incubation. *Journal of Finance*, 1581-1611.

Fama, Eugene F. 1965. The Behaviour of Stock Market Prices. *The Journal of Business*, 38 (1): 34-105.

Fama, Eugene F. 1970. Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance*, 25 (2): 383-417.

Fama, Eugene F., and Kenneth R. French. 2010. Luck versus skill in the cross-section of mutual fund performance. *Journal of Finance* 65: 1915-1947.

Fama, Eugene F., and Kenneth R. French. 1992. The Cross Section of Expected Returns. *Journal of Finance*, 47 (2): 427-465.

Ferreira, Miguel A., Aneel Keswani, António F. Miguel, and Sofia B. Ramos. 2013. The Determinants of mutual fund performance: A cross-country study. *Review of Finance*, 17 (2): 483-525.

Ferson, Wayne E., and Rudi W. Schadt. 2016. Measuring Fund Strategy and Performance in Changing Economic Conditions. The Journal of Finance 51 (2): 425-461.

Ferson, Wayne E., and Meijun Quan. 2014. Conditional Performance Evaluation, Revisited. In The Research Foundation of the Association for Investment Management and Research (January, 2004).

Frazzini, Andrea, Jacques A. Friedman, and Lukasz Pomorski. 2016. Deactivating active share. *Financial Analysts Journal* 72: 14-21.

Fulkerson, Jon A. 2013. Is timing everything? The value of mutual fund manager trades. *Financial Management* 42: 243-261.

Gârleanu, Nicolae, and Lasse Heje Pedersen. 2018. Efficiently Inefficient Markets for Assets and Asset Management. *Journal of Finance* 73 (4): 1663-1712.

Gianetti, Mariassunta, and Luc Leaven. 2016. Local Ownership, Crises, and Asset Prices; Evidence from US Mutual Funds. *Review of Finance* 20(3): 947-978.

Glode, Vincent. 2011. Why mutual funds «underperform». *Journal of Financial Economics* 99 (3): 546-559.

Gottesman, Aron A., Matthew R. Morey, and Menahem Rosenberg. 2013. Is there an Incentive for Active Retail Mutual Funds to Closet Index in Down Markets? Fund Performance and Subsequent Annual Fund Flows between 1997 and 2011. *Journal of Investment Consultin*g 14 (2): 47-58.

Grinblatt, Mark, and Sheridan Titman. 1989. Mutual Fund performance: An Analysis of Quarterly Portfolio Holdings. *Journal of Business* 62: 394-415.

Grinblatt, Mark, and Sheridan Titman. 1992. The persistence of mutual fund performance. *The Journal of Finance* 47 (5): 1977-1984.

Grinblatt, Mark, and Sheridan Titman. 1993. Performance measurement without benchmarks. *Journal of Business* 66: 47-69.

Grinold, Richard C., and Ronald N. Kahn. 1999. *Active portfolio management.* McGrawHill 2nd Edition.

Grossman, Sanford J., and Joseph E. Stiglitz. 1980. In the impossibility of informationally efficient markets. *The American Economics Review* 70 (3): 393-408.

Gruber, Martin J. 1996. Another puzzle: The growth in actively managed mutual funds. *Journal of Finance* 51(3): 783-810.

Grytten, Ola. H. 2020. The Corona Crisis: How different is this crisis really? Norwegian School of Economics. Collected from: https://www.youtube.com/watch?v=Sz69zv3sYq8

Gupta, Francis, Robertus Prajogi, and Eric Stubbs. 1999. The Information Ratio and Performance. *The Journal of Portfolio Management*, 26 (1): 33-39.

Hale, Jon. 2016. Morningstar Sustainability Rating: et nytt perspektiv for investorer. Morningstar, https://www.morningstar.no/no/news/148087/morningstar-sustainability-rating.aspx

Hartzmark, Samuel M., and Abigail B. Sussman. 2019. Do investors value sustainability? A natural experiment examining ranking and fund flows. *Journal of Finance* 74: 2789-2837.

Hendricks, Darryll, Jayendu Patel, and Richard Zeckhauser. 1993. Hot hands in mutual funds: Short-run persistence of relative performance 1974-1988. *The Journal of Finance* 48 (1): 93-130.

Henriksson, Roy D., and Robert C. Merton. 1981. Market Timing and Investment Performance: Statistical Procedures for Evaluating Forecast Skills. *Journal of Business*, 54 (4): 513-533.

Hoberg, Gerard, Nitin Kumar, and Nagpurnanand Prabhala. 2018. Mutual fund competition, managerial skill, and alpha persistence. *Review of Financial Studies* 5: 1896-1929.

Huang, Jing-Zhi, and Ying Wang. 2010. Should Investors Invest in Hedge Fund-Like Mutual Funds? Evidence from the 2007 Financial Crisis. *Journal of Financial intermediation* 22 (3): 482-512.

Huji, Joop, and Marno Verbeek. 2009. On the use of multifactor models to evaluate mutual fund performance. *Financial Management* 38: 75-102.

Ibbotson, Roger G., and Paul Kaplan. 2000. Does Asset Allocation Policy Explain 40, 90 or 100 Percent of Performance? *Financial Analysts Journal*, jan/feb 2000.

Ippolito, Richard A. 1989. Efficiency with costly information: A study of mutual fund performance, 1965-1984. *Quarterly Journal of Economics* 104: 1-23.

Ito, Mikio, Akihiko Noda, and Tatsuma Wada. 2014. International stock market efficiency: a non-Bayesian time-varying model approach. *Applied Economics* 46 (23): 2744-2754.

Jegadeesh, Narasimhan, and Sheridan Titman. 1993. Returns to buying winners and selling losers: Implications for stock market efficiency. *Journal of Finance* 48: 65-91.

Jensen, Michael C. 1968. The performance of mutual funds in the period 1945-1964. *The Journal of Finance* 23 (2): 389-416. Collected from: https://doi.org/10.1111/j.1540-6261.1968.tb00815.x

Jones, Cristopher S., and Jay Shanken. 2005. Mutual fund performance with learning across funds. *Journal of Financial Economics* 78: 507-552.

Kacperczyk, Marcin, Stjin van Nieuwerburgh, and Laura Veldkamp. 2014. Time-varying fund manager skill. *Journal of Finance* 69: 1455-1484.

Kacperczyk, Marcin, Clemens Sialm, and Lu Zheng. 2008. Unobserved Actions of Mutual Funds. *The Review of Financial Studies* 21 (6): 2379-2416.

Kallberg, Jarl G., Liu L. Crocker, and Charles Trzcinka. 2000. The Value Added from Investment Managers: An Examination of Funds of REITs. *Journal of Financial and Qualitative Analysis* 35 (3): 387-407.

Kaplan, Steven N., and Berk A. Sensoy. 2005. Do mutual funds time their benchmarks? SSRN Electronic Journal, in *working paper*.

Khorana, Ajay, Henri Servaes, and Lei Wedge. 2007. Portfolio manager ownership and fund performance. *Journal of Financial Economics* 85: 179-204.

Kosowski, Robert. 2011. Do mutual funds perform when it matters most to investors? US mutual fund performance and risk in recessions and expansions. *Quarterly Journal of Finance* 1 (3): 607-664.

Kosowski, Robert, Allan Timmermann, Russ Wermers, and Hal White. 2006. Can mutual fund "stars" really picks stocks? New evidence from a bootstrap analysis. *Journal of Finance* 61: 2551-2595.

Linderud, E, J Bakken, S Vold, and M Berg. 2020. «Bankene har superprofitt på salg av aktive fond – kundene taper. Dagens Næringsliv.» https://www.dn.no/magasinet/dokumentar/aksjefond/indeksfond/sparing/bankene-har-superprofitt-pa-salg-av-aktive-fond-kundene-taper

Linnainmaa, Juhani T. 2013. Reverse survivorship bias. *Journal of Finance* 68: 789-813.

Lynch, Anthony W., and David K. Musto. 2003. How Investors Interpret Past Fund Returns. *Journal of Finance* 58: 2033-2058.

Malkiel, Burton G. 1995. Returns from investing in equity mutual funds 1971-1991. *The Journal of Finance* 50 (2): 549-572.

Mamaysky, Harry, Matthew Spiegel, and Hong Zhang. 2007. Improved forecasting of mutual fund alphas and betas. *Review of Financial Studies* 21: 233-264.

Markowitz, Harry. 1952. Portfolio Selection. *The Journal of Finance*, 7 (1): 77-91.

Moskowitz, Tobias J.. 2000. Discussion: Mutual fund performance: An empirical decomposition.

Moskowitz, Tobias J.. 2001. An Analysis of Covariance and Pricing Anomalies. *Review of Financial Studies* 16 (2): 417-457.

Nain, Amrita, and Tong Yao. 2013. Mutual fund skill and the performance of corporate acquirers. *Journal of Financial Economics* 110: 437-456.

Nofsinger, John, and Abhishek Varma. 2014. Socially responsible funds and market crises. *Journal of Banking and Finance* 48: 180-193.

Nohel, Tom, Jay Z. Wang, and Lu Zheng. 2010. Side-by-side management of hedge funds and mutual funds. *Review of Financial Studies* 23: 2342-2373.

OECD. 2008. Financial Market Highlights – May 2008: The Recent Financial Market Turmoil, Contagion Risks and Policy Responses. Technical Report May.

Otten, Roger, and Dennis Bams. 2002. European Mutual Fund Performance. *European Financial Management*, 8 (1): 75-101.

Pasquariello, Paolo. 2014. Financial market dislocations. *Review of Financial Studies*, 27(6): 1868-1914.

Pástor, Lubos, Robert F. Stambaugh, and Lucian A. Taylor. 2015. Scale and skill in active management. *Journal of Financial Economics* 116:1483-1528.

Petajisto, Antti. 2013. Active share and mutual fund performance. *Financial Analysts Journal* 69 (4): 73-93.

Phelps, Shawn, and Larry Detzel. 1997. The nonpersistence of mutual fund performance. *Quarterly Journal of Business and Economics* 36: 55-69.

Puckett, Andy, and Xuemin (Sterling) Yan. 2011. The interim trading skills of institutional investors. Journal of Finance 66: 601-633.

Samuelson, Paul A. 1965. Proof That Properly Anticipated Prices Fluctuate Randomly. *Industrial Management Review*, 6 (2): 41-49.

Sensoy, Berk A. 2009. Performance evaluation and self-designated benchmark indexes in the mutual fund industry. *Journal of Financial Economics* 92: 25-39.

Sharpe, William F.. 1964. Capital Asset Prices: A Theory of Market equilibrium under conditions of risk. *Journal of Finance* 19: 425-442.

Sharpe, William F.. 1966. Mutual Fund Performance. *Journal of Business*, 39 (1): 119-138.

Shin, Hyun S. 2003. Disclosures and Asset Prices. *Econometrica* 71 (1): 105-133.

Schwab, Charles. 2016. "Why Global Diversification Matters." Forbes. https://www.forbes.com/sites/charlesschwab/2016/04/22/why-global-diversification-matters/

Subramanyam, K. R., and Mohan Venkatachakam. 2007. Earnings, cash, flows, and Ex post intrinsic value of equity. The Accounting Review 82 (2): 457-481.

Sun, Zheng, Ashley Wang, and Lu Zheng. 2009. Do Active Funds Perform Better in Down Markets? New Evidence from Cross-Sectional Study. SSRN, 10.2139/ssrn.1474083

Sørensen, Lars Q. 2009. Mutual fund performance at the Oslo stock exchange. SSRN, https://doi.org/10.2139/ssrn.1488745.

Thakor, Anjan V. 2015. The Financial Crisis of 2007-2009: Why Did It Happen and What Did We Learn? *The review of Corporate Financial Stuides* 4 (2): 155-205.

Treynor, Jack K, and Kay K. Mazuy. 1966. Can mutual funds outguess the market? *Harvard Business Review:* 131-136.

Verdipapirfondenes forening. 2021. Begreper. Verdipapirfondenes forening, https://vff.no/fondshandboken/begreper#R

Von Reibnitz, Anna Helen. 2017. When opportunity knocks: Cross-sectional return dispersion and active fund performance. *Critical Finance Review* 6: 303-356.

Waring, B, and Laurence B. Siegel. 2003. The Dimensions of Active Management. *The Journal of Portfolio Management* 29 (3): 35-51.

Warren, Geoff. 2020. Active Investing as a Negative Sum Game: A Critical Review. Working Paper – *Journal of Investment Management.*

Wermers, Russ. 1997. Momentum investment strategies of mutual funds, performance persistence, and survivorship bias. In *working paper*. University of Colorado.

Wermers, Russ. 2000. Mutual Fund Performance: An Empirical Decomposition into Stock Picking Talent, Style, Transaction costs, and Expenses. *Journal of Finance*, 55 (4): 1655-1695.

Wermers, Russ. 2019. Active Investing and The Efficiency of Security Markets. *The Journal of Investment Management* 2020, forthcoming.

Wermers, Russ, Tong Yao, and Jane Zhao. 2012. Forecasting stock return through an efficient aggregation of mutual funds holdings. *Review of Financial Studies* 25: 3490-3529.

World Health Organization. 2020. Archived: WHO Timeline – COVID-19. World Health Organizaiton. https://www.who.int/news/item/27-04-2020-who-timeline—covid-19

Master theses:

Brautaset, Camilla Helén, and Wendel Andrine Torset. 2020. “Do active managers live up to their pitch? An empirical study on Scandinavian active fund performance in crisis.” Master thesis, Norwegian School of Economics.

Hovstad, Anders, and Arnt Olav Langedal. 2018. «Aktiv forvaltning I det norske fondsmarkedet: En empirisk analyse av sammenhengen mellom prestasjon og grad av aktiv forvaltning i norske aksjefond over tidsperioden 2008-2018.» Master thesis, Norwegian School of Economics.

Johnsen, Kristian W., and Lars Kristian Storm. 2015. “Norwegian Equity Funds: An empirical Study of Active Management & Performance.” Master thesis, Norwegian School of Economics.

Smørgrav, Bjørn Olav, and Andreas Næss. 2011. «Active share i norsk fondsforvaltning: En empirisk analyse.» Master thesis, Norwegian School of Economics.